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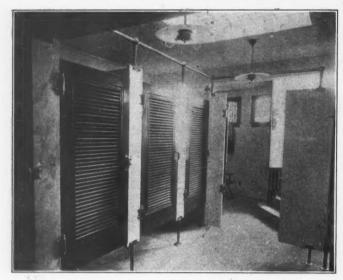
THE beach front public comfort station at Atlantic City, N. J., is unusual in several respects, but principally because the entire structure was built under adverse conditions, being located on an open sandy beach where it was subjected to all the whims of the ocean, the foundations being below ordinary high tide.

The station is located on the ocean side of the famous "boardwalk," across the end of a street which runs at right angles with the beach. It is circular in plan, thirty feet across, and a portion of it extends back under the board walk. The general appearance is dignified and massive, implying ability to resist ocean storms. It is built of reinforced concrete of monolithic construction. The walls are 12 inches thick, and the floor is 9 inches thick and well reinforced to with-

stand the upward pressure of the tidewater. All parts were water-proofed, and so far there has been no leakage, the inside being absolutely dry at the highest storm-tide.

Access to the building from the boardwalk is had by two stairways leading around the outside to a concrete walk built at the front of the station; which walk is reached from the beach also by a flight of four steps. The doors of the two departments open directly onto this walk.

The floor of the building is located 3 feet 6 inches below the level of storm tide and a little above ordinary high tide. The street sewer which serves the station is higher than the floor, necessitating the use of sewage ejectors for the plant. The ejectors are located in a



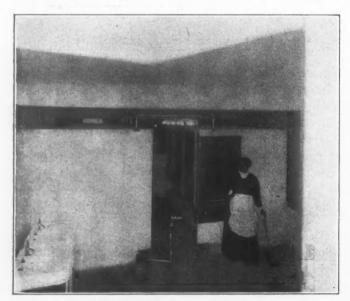
MEN'S DEPARTMENT

concrete sump pit built at one corner of the building, about five feet below the floor of the station.

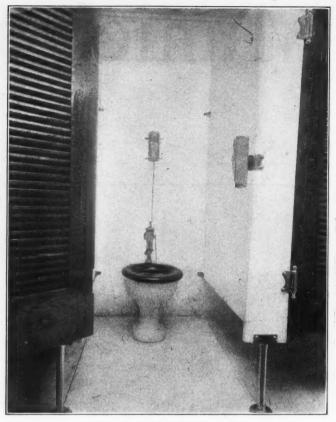
As the boardwalk is carried on the roof of the station an elaborate ventilating system here was impracticable; but by means of windows, ceiling vents and two ventilating stacks the air is kept very pure. Each fixture is vented through the same stacks, which are of iron pipes, carried to a sufficient height to serve as electrolier standards, as shown in the illustration. The building is heated and lighted by electricity; and the illumination by daylight is as good as a well-lighted room in any house. In addition to the windows, the ceilings have prism lights embedded in the concrete. The entire place is so arranged that, by means of a hose attached to a bib-cock, all walls, floors, ceiling, etc., throughout may be thoroughly flushed.

The sanitary appliances include thirteen syphon-jet, back outlet, vitreous china bowls with a flushing valve for each connected directly with the street pressure. There are six urinals flushed from overhead tanks. The flush water from all fixtures and all floor drainage is emptied into the ejector sump, and from there is discharged into the street sewer.

The architect of the station was H. A. Stout, of



WOMEN'S DEPARTMENT



TYPICAL CLOSET AND FITTINGS

Atlantic City. The work was done under the direction of James B. Reilly, Chairman of the Boardwalk Committee.

ECONOMY OF CINCINNATI'S NEW PUMPS

The new pumping plant of the Cincinnati Water Works has already demonstrated the wisdom of installing it to replace the old plant. Mr. G. H. Benzenberg, the Chief Engineer of the Water Works Commissioners, on December 18 reported on the cost of operation of the new as compared with the old plant, closely approximating the cost of operation from that time to the end of the year. These costs are those of operating only, and the saving shown was not due in any way to extension of meter service or other actions tending to reduce consumption.

As described in the MUNICIPAL JOURNAL for November 4 of last year, a filter plant was constructed at the same time as the new pumping plant, and was first put into operation October 21, 1907. The operation of the filters during 1908 cost \$62,121.54. The new pumping plant began handling the entire supply June 16, 1907. This is therefore the first full year of operation of either.

The total cost of operating both pumping and filtration plants during 1908 has been \$244,040.26; leaving for pumping only \$181,918.72. The operation of the old pumping plant in 1906 cost \$487,200.05, or two and two-thirds times as much as last year, the service being the same in each case, except that during a part of the year the old plant was used for a second repumping of about 0.2 per cent. of the total supply to the Westwood district. The cost of both pumping and filtration in 1908 is seen to be about one-half that of pumping only in 1906. These figures include no fixed expenses.

ASPHALT-TESTING — PENETRATION

Special Requirements for Each Kind of Asphalt, as Ordinarily Specified, Seriously Objectionable—Limit of Variation in Penetrations at Different Temperatures Recommended

BY HARRY TIPPER

TESTING of asphalt cement for hardness by the method known as the "penetration test" has been in use for many years, with slight variations in the methods for conducting the test. The penetration measured by this test is the distance to which the needle will penetrate the material when weighted to a fixed amount and acting through a given time. With this test the degree of malleability or hardness is obtained at various temperatures, together with the general stability of the material.

As a measure of the ability of the material to meet practical paving conditions and to withstand varying temperatures without undue change, the penetration test is the most important test which can be used in studying the suitability of asphaltic cement. Like almost every other test of asphalts, however, it presents the difficulty that no two asphaltic cements will agree thoroughly in penetration if taken at one fixed temperature. This has led some engineers to adopt specifications similar to those for the ductility test in that different requirements for penetration at the same temperature are specified for different kinds of asphalt cement. These are subject to the same criticism as the ductility specifications, namely, that it becomes impossible to reduce them to any standard which will admit asphalt cements generally, without reference to

A S

DOW STANDARD PENETRATION MACHINE

their origin; the specifications therefore requiring the addition of a new test for each asphaltic cement allowed under them. They are thus a distinct hindrance to the introduction of new brands of asphaltic cements or new methods of production, for the reason that such would have to await the slow and tardy investigation of engineers before they were recognized and included in the specifications.

A further complication of this test is occasioned by the use of a different weight and different duration of test for each of the different temperatures at which the test is made. For comparative purposes there would appear to be no reason why there should be these differences in weight and time, since the comparison will be more thoroughly complete if all cements be tested with the same weight and for the same length of time at any given temperature.

As has been said, the penetration test is a very important one, and in fact the only valuable one for ascertaining certain characteristics which have a bearing on practical paving conditions. But the objections just referred to—that if one particular penetration between small limits is considered necessary, full competition is rendered impossible; while on the other hand if each cement is given a separate penetration requirement, the specifications are necessarily limited to particular brands—introduce a great difficulty in the use of this test as a real and general standard which will include all the valuable requirements and involve no special investigations.

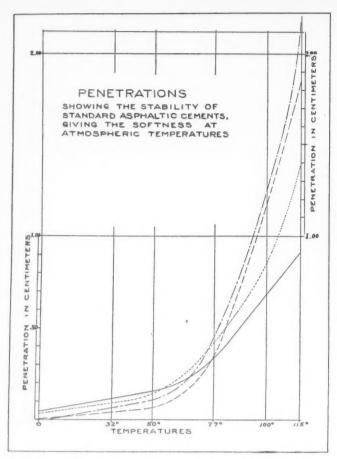
In attempting to make of the penetration test a standard, so that it will not be necessary to name the brand or the origin of each cement and submit it for special investigation before it can be considered under the specifications, it is necessary to consider how far the degree of penetration at any one temperature is a measure of value, and to what extent the value lies in the variation in penetrability throughout a certain range of temperatures.

There does not appear to be any definite and intimate connection between the degree of penetration at one temperature and the stability of the pavement at other temperatures. That is to say, tests of different bitumens made with the same weight and with the same duration of test (100 grams for five seconds), but at different temperatures, show that certain bitumens which have less penetration than others at 77° may have higher penetration at 32° and lower penetration at 100° or 150°. A test of this character of four different asphaltic cements gave the following results:

Temperature. Bermudez. Trinidad. Obispo. Texaco. 77°44 .35 .42 .33 .32°05 .04 .00 .10

32°05 .04 .09 .10 .15° 2.09 1.85 1.34 .90

These results definitely show that the penetration at



PENETRATION OF SEVERAL ASPHALTS AT DIFFERENT TEMPERATURES

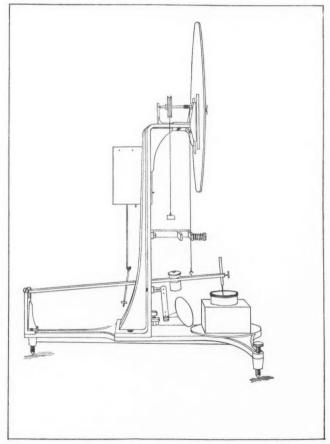
77° is not necessarily a measure of the stability of an asphalt at all temperatures; since it is seen that Texaco, which has the lowest penetration at 77° has the highest penetration at 32° and the lowest again at 115°; showing that the stability of this asphalt through varying temperatures is greater than that of some of the other cements which show a higher penetration or a greater degreee of softness at 77°.

This table would seem to indicate that the value of this test as a measure of the stability of the material under temperature changes depends not so much upon the actual degree of penetration at a middle temperature as upon the percentage of variation from this penetration which occurs at the low and high temperatures. Of the asphalts represented in the table, Bermudez, having the highest penetration at 77°, is shown to be much softer at a paving temperature of 100° and much harder at a temperature of 32° than is Texaco. The table would indicate not only that in standard specifications employing this test, the variation allowable between penetrations at extreme temperatures should be fixed, but also that quite wide limits are necessary in order to produce a standard which will allow of the admission of various asphaltic cements.

As with other tests, the value of this one depends upon its ability to show the character and condition of the asphaltic cement at the various atmospheric temperatures to which the actual pavement will be subjected, and it would seem to be desirable to especially consider conditions at the highest and lowest ordinary pavement temperatures; since, with these extreme con-

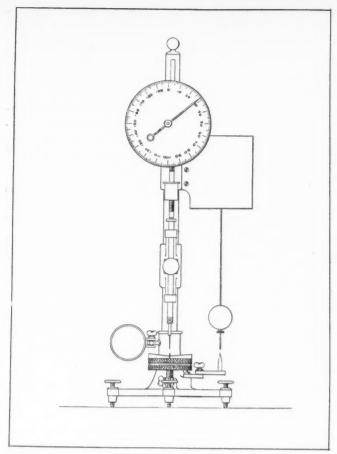
ditions properly provided for, the stability of the material at intermediate points would seem to be assured.

If, however, in making the test at different temperatures we vary the time and weight, the results are not accurately comparable and do not correctly reveal the variation in the action of the cement. As an example: if the penetration at 77° be taken with a weight of 100 grams and a duration of five seconds, and the penetration at 32° be taken with a weight of 200 grams and an interval of one minute, the resulting figures will in no wise express the degree of variation which has occurred in this characteristic of the paving cement between these temperatures. Doubling the weight and allowing the needle to penetrate for a period twelve times as long will undoubtedly show a greater degree of stability-that is, much less hardening occasioned by the drop in temperature—than would actually occur under practical conditions. If, however, the penetration be taken with the same weight and the same duration of time for both temperatures, the result will express accurately the amount of hardening which takes place in the asphaltic cement due to the drop in temperature, as it will occur in the actual pavement.



BOWEN PENETRATION MACHINE

The weight at 115° is ordinarily, in Mr. Dow's, standard, 50 grams. This weight is just 50% of that used at 77° and just 25% of that used at 32°. Figures obtained by such a variation in weights give a very misleading expression of the stability of a cement, nor do they represent in any way the action of the cement under atmospheric conditions in the pavement. A test so conducted apparently serves no useful purpose, is foreign to the practical conditions, and its use is therefore only a hindrance to the accurate testing of as-



RICHARDSON PENETRATION MACHINE

phaltic cements and cannot be too strongly condemned. In order to secure the full value of the penetration test as a measure of stability for asphaltic cement for paving purposes, the test should be taken with a wide allowance of difference in amount of penetration at 77° F., and should fix a limit of variation from this at 32° and 115°, using the same weight and for the same duration of time at all temperatures. In this way it will not be necessary to vary the specifications for different asphaltic cements, and the penetration figures resulting from the tests will be accurate measures of the variation in the character of the cement due to such temperature changes as may occur in practical work.

WATER FILTRATION AT GUTHRIE

THERE is now being constructed at Guthrie, Okla., a filtration plant consisting of sedimentation basins and sand filters, both in duplicate and a clear water reservoir. The water is pumped from Cottonwood River by a 1,00,000-gallon electrically-driven centrifugal pump, which lifts it thirty feet into one basin, from which it flows to the other, being treated with a coagulant on the way. From this it flows to the filters, which contain 8 inches of gravel and 30 inches of sand, the two layers being separated by a wire screen of 100 meshes to the square inch. The sedimentation basins are each 35 x 80 feet, constructed of reinforced concrete, as are the filter walls. Water enters and leaves the sedimentation tanks over the edges of horizontal troughs at opposite ends, and enters the filters over the edges of troughs placed around three sides of each.

TO ABOLISH INTERCEPTING TRAPS

The sewage of Irvington, N. J., discharges into the joint trunk sewer which was constructed two or three years ago to carry to an outlet at tidewater the house sewage from a number of New Jersey municipalities. Recently considerable trouble from sewer gas has been experienced in Augusta street and Lincoln Place in that town. The matter finally became so serious that a commission consisting of Alexander Potter, designing and constructing engineer of the joint trunk sewer, E. S. Rankin, Engineer of Sewers of Newark, and E. A. Halsey, Engineer of Irvington, was appointed to investigate the matter. They have recently reported upon the subject, their general conclusions being given in the following extract from the report:

"In the attempt to exclude the ground-water from this section the manholes on the Joint Trunk Sewer and throughout Irvington have been plugged up so that the gas generated throughout the sewerage system had to find some other way of escape than through the manhole covers. The plumbing law of Irvington is copied largely from the Newark plumbing ordinance, which provides for intercepting traps on all house sewerage connections. With these traps working properly and with the manholes closed to prevent the escape of air into the streets, there is only one logical sequence, and that is, that the foul sewer air makes itself felt more pointedly wherever there happens to be an open manhole cover or other access to the air. There is only one remedy from this condition, and that is that the intercepting traps be cut out. This is in accordance with the best sanitary regulations and is the system used in East Orange and several other neighboring towns. Years ago these traps were considered an absolute necessity on all sewerage systems, but at the present time, in the majority of modern sewerage systems, they are omitted altogether and dependence placed upon the individual traps on the fixtures. With the intercepting trap omitted from the main house connections, contrary to what might be expected, there is less responsibility in not having the individual traps perfect than before, for the reason that, with the intercepting traps omitted, the sewer gas as it is first generated in the mains finds an immediate exit through the ventilating pipes to the roof and is not present in volume nor strength to the same extent as where it is confined back of the trap until it gains sufficient strength to force the trap, where there is a greater chance of its forcing the individual traps as well. The presence of these house traps has been repeatedly shown to be a source of possible danger where sanitary inspection has been inefficient, for the ventilating pipe in such a system is carried up from the house lateral and is terminated a few feet above the ground, so that the gas from the sewer passes up in front of the house, causing noxious odors in the vicinity of such a ventilator. We would therefore recommend that the system of intercepting traps be dispensed with in all the towns connected with this joint trunk sewer where such action has not already been taken."

LARGE "WIRE" LAMPS VERSUS ARCS

Large Metallic Filaments as Substitutes for Arc Lamps— Economy in Current Obtained—Cost of Purchase and Operation

By ALTON D. ADAMS

METALLIC filament lamps of 200, 300 and 400-candle-power each are being used in Europe, and the 200-candle-power size is made in the United States. In England these "wire" lamps of 200, 300 and 400 candle-power operate with 220, 330 and 440 watts, respectively, or with I I-I0 watts per candle-power, and in America the 200-candle-power size consumes 250 watts. "Wire" lamps of such high efficiency and candle-powers form very desirable substitutes for enclosed arcs operating with alternating current, because of the lower first cost and operating expense of the metallic filaments, for equal illumination in both inside and outside lighting.

Better results as to cost of illumination can be got with clusters of "wire" lamps in the 80-candle-power or smaller sizes than with alternating enclosed arcs, but the large units of 200, 300 and 400-candle-power each are even more economical, and should be used where either of these amounts of illumination is wanted at one point. The types of alternating arc lamps used for interior lighting commonly consume about 3 watts per mean spherical candle-power. A tungsten "wire" lamp, on the other hand, operates with I I-4 watts per mean horizontal candle-power, and consumes about I.6 watts per mean spherical candle-power, or a little more than one-half of the energy required by an alternating arc lamp for an equal illumination.

On the basis just stated, the tungsten lamps of 200 mean horizontal candle-power each, and consuming 250 watts, as made in the United States, should yield about 160 mean spherical candle-power, while an enclosed arc lamp operating with 450 watts alternating current would give 150 mean spherical candle-power of the type commonly used for inside lighting. Calling the total illuminating powers of these two lamps equal, the tungsten "wire" filament saves 200 watts that would be required by the enclosed arc. During one hour this power of 200 watts would cost 2 cents, at a price of 10 cents per kilowatt hour.

In America the list price of the 200-candle-power tungsten lamp is \$4, and the discount in quantities reduces this to \$3.20 net. The reputed life of these lamps is about 1,000 hours of operation, on an average, but at 800 hours the cost of the lamp alone, at list price, is 5-10 cent per hour of burning. Interest, repairs, trimming and depreciation will eat up a large part of 5-10 cent per hour of operation at the alternating enclosed arc lamp; but if all these items are disregarded the saving of 2 cents per hour from the cost of current at the enclosed arc is four times the cost of renewing the tungsten "wire" lamp of 200 mean horizontal candlepower. The 450 watts consumed by the enclosed alternating arc costs 4.5 cents per hour at the rate of 10 cents per kilowatt hour for current, and even if this rate includes the interest, repairs and care of the arc lamp, and if the consumer must pay the cost of renewals for the 200 candle-power tungsten wire lamp besides the rate for current, the total hourly cost of operating this "wire" lamp is only 3 cents, showing a saving of 1.5 cents per hour, or 33 per cent. over the cost of the arc.

All of the above figures for alternating arc lamps apply to the type used for interior lighting, but the advantage of the tungsten "wire" lamps for street lighting is nearly as great as that just shown for interior use.

In street lighting a reflector is used to concentrate the entire illumination of the alternating enclosed arc lamp in the lower hemisphere about it, because light above the horizontal plane through the lamp is of little benefit, and this practice, together with the fact that the type of lamp used outside is more efficient than the type generally used inside, gives a consumption of about 1.5 to 2 watts per mean hemispherical candle-power, in alternating street arcs.

The great desideratum in street lighting, however, is sufficient illumination at points midway between lamps, and so it befalls that the mean hemispherical candle-power of a street lamp is less important than its candle-power in directions a little below the horizontal plane through it. As most generally used for street lighting, the alternating enclosed arc is rated to consume 400 to 425 watts, and yields about 250 candle-power in directions 10 to 15 degrees below the horizontal plane through the arc.

If a tungsten "wire" lamp of 200 mean horizontal candle-power, consuming 250 watts, be mounted with a suitable reflector, it gives fully 250 candle-power in directions between 10 and 15 degrees below the horizontal plane through the filament, and is thus a fair substitute, as to illumination midway between lamps, for many of the enclosed alternating arcs on the streets. As this 250watt tungsten "wire" lamp saves 150 to 175 watts, in comparison with the 400 to 425-watt alternating arc, the amount of this saving is at least 1.5 cents per hour, when the rate for energy is 10 cents per kilowatt hour. Trimming and other charges on the alternating arc offset in large part the cost of renewing the 250-watt tungsten lamp, but even if the cost of these renewals is added to that of the operating current, at 10 cents per kilowatt hour, the total hourly cost of the light from this "wire" lamp is only 3 cents, while that of the alternating arc is 4 to 4.25 cents, where the rate for energy includes the trimming and care of the arc.

Where the 250-watt tungsten lamp is not available for street lighting, even better results may be got by replacing each 400-watt alternating arc by a cluster of four tungsten "wire" lamps each rated at 60 mean horizontal candle-power and operating with 75 watts, so that the cluster consumes 300 watts, and costs 3 cents per hour of burning, with current at 10 cents per kilowatt hour.

The list price of these 60 candle "wire" lamps is \$1.50 each, or \$1.20 each in quantities, so that the cluster of four costs \$6.00 list, and with the reported life of 1,000 hours the cost of renewing these lamps is 6-10 cent per hour. As this cluster consumes 300 watts,

the hourly cost of operation including renewals is 3.6 cents, at 10 cents per kilowatt hour, or 4-10 to 75-100 cents less than the cost of current at this rate for an alternating arc.

When tungsten "wire" lamps of 300 and 400 candlepower become available for street lighting, in the United States, they may be substituted with advantage for most types of arcs now in general use for this purpose.

SEWAGE DISCHARGE INTO TIDAL WATERS

The report of the Royal Commission on Sewage Disposal, an abstract of which was published in the Municipal Journal a few weeks ago, was accompanied by a report, forming the Sixth Appendix, on "The Pollution of Estuaries and Tidal Waters," written by Prof. Letts and Dr. W. E. Adeney. The book contains some five or six hundred pages, largely the evidence of medical officials, engineers, and others; but the writers have endeavored to present in brief form the conclusions which are justified by this evidence.

One of the interesting and important facts which are made prominent is the important part which seaweed plays in the purification of sewage-polluted tidal waters. Professor Letts was uncertain whether the evil-smelling sulphur compounds which result from the putrefaction of seaweed blown upon the shores was produced from the albuminoids of the seaweed or from the sulphates present in seawater. A more important fact, which appears to be demonstrated, is the power which these green seaweeds possess of assimilating nitrogenous compounds such as ammonia and nitrates, and also of evolving large quantities of oxygen. It is thus seen that the seaweed plays the same part in water as trees do in the air, absorbing the objectionable elements and giving off oxygen, the great purifying element. This assimilation of sewage as food would account for the larger quantities of seaweed present in polluted than in unpolluted waters. In certain English seaside towns enormous quantities of these sewage-consuming seaweeds are heaped along the foreshore by the winds and in decomposing give off large volumes of sulphuretted hydrogen. While this latter result is an undoubted nuisance, the accompanying benefit caused by the purifying of the water very considerably offsets this.

The writers of the report find the most injurious constituents of sewage in tidal waters to be the solids, which are readily deposited in sluggish waters, often forming banks of sludge which may become offensive and even dangerous, besides filling up the channels and waterways. They believe therefore that it is obvious that heavy detritus should be separated from sewage before it is discharged into any tidal water, except where the currents are unusually swift. Especially should it be assured that under no condition of the tide will sewage flow into slack water or over an uncovered beach.

As to the amount of sewage which can be discharged at a given outlet, this is dependent largely upon the rapidity with which it is diluted and distributed over a wide area by tides and currents before a flood tide starts it back toward the shore. If the amount of sewage exceeds 5 per cent. of the diluting water it should be subjected to preliminary purification, unless the conditions are quite favorable. If the discharge is limited to the ebb tide, however, the quantity of sewage discharged may be two or three times as great. They call attention to the fact, well recognized by experts on the subject, that the diluting water should be taken as not the whole volume of the tidal flow, but only that portion of it which mixes with the sewage by the time it reaches a reasonable distance below the outfall under the most unfavorable conditions, such as absence of wind; the authors assigning an approximate length of 200 yards as being a reasonable distance.

UNIFORM MUNICIPAL ACCOUNTS

Uniform system in keeping municipal accounts is spreading rapidly in Massachusetts cities, largely through the efforts of the State Bureau of Statistics and Labor. Lowell is one of the latest to fall into line, and on December 16 adopted a system which will go into effect early in 1909. Among the more important provisions are the following:

Section I—That the office of the City Treasurer be solely a receiving and distributing office, the receipts and payments of which shall be reported monthly to the City Auditor and the accounts of which shall be regularly audited by him.

Section 2—That the office of the City Auditor be the accounting office, in which shall be kept the general books of the city.

Section 3—All departments and officers of the city government shall keep and furnish such records, in book form or otherwise, as shall be prescribed by the City Treasurer and City Auditor.

Section 4—The head of each department and officers receiving money for the city shall remit to the City Treasurer as often as once a month all moneys that may be in the possession of such departments or officers belonging to the city, except in such cases where the time for payment to the City Treasurer is prescribed by statute.

Section 5—All officers and departments required to deposit bills with the City Treasurer for collection shall file with the City Auditor an itemized account of the same, with the statement of the accounts to which the same should be credited when paid.

Section 6—All officers and departments paying fees or moneys received by them to the City Treasurer shall file with the City Auditor an itemized statement of the sourcesfrom which said fees or moneys were received.

Section 7—That all bills rendered to the city through its-various departments shall be presented direct to and examined by the responsible head or heads of each department, and if found correct shall be approved by them over their own signatures; that they shall be secured in wrappers of a uniform width and length, which wrappers shall be properly backed in their respective departments, after which all the bills as approved and wrapped shall be delivered to the City Auditor's office not later than the sixth day of each month, accompanied by a list of the bills and the total amount of the same; to insure uniformity in the wrappers they shall be furnished by the Auditor's office.

The ordinance also provides that in the future all amounts due on bills or pay rolls shall be turned back to the credit of the department from which the money was drawn at such times as may be agreed upon by the City Treasurer and City Auditor.

WATER WORKS FINANCES

Discussion on Bookkeeping of Water Departments by Public Accountant Rex-Woonsocket's Financial Statement as It Should Be and As It Is

A REPORT of considerable interest to the director and other officials of water works departments is that recently submitted to the City Council of Woonsocket, R. I., by Geo. M. Rex, a public accountant who was engaged to examine and audit the books of the various city departments and make such recommendations as would be calculated to add to the efficiency of the Water Works Department as a municipal enterprise. It is not worth while to give here all the figures which Mr. Rex obtained in his examination of the books of the Department for the 23 years ending with 1907, but his general remarks on the subject of the bookkeeping of water works departments and on their finances generally are of more than local interest; and his statement of the financial history and present condition of the works, given in two forms, one as they appear on the books of the city and the other as they would have appeared had the city's financial methods been conducted on a sound business basis, are given as a definite illustration of his criticisms and suggestions.

It might be said that the city, during the years 1904 to 1907, paid a hydrant rental of \$70,652.50, or an average of \$17,663.12 a year. During the same four years the Department also received \$1,309.36 for watering the streets and flushing sewers, an average of \$327.34 a year. Whether the value of other water used by the city was credited to the Department we do not find stated. During the 23 years of operation \$256,154.72 has been paid for permanent improvements from the earnings and \$315,001.92 from taxation; but all of the improvements during the last twelve years have been paid for from the earnings alone. The amount of the earnings, invested in permanent improvements, is stated in Schedules A and B. Mr. Rex says:

The method employed by the city in caring for this Department is by appropriation and bond issue, the revenue derived from the sale of water and materials being added to the general account. This, I believe, and my contention is borne out by practice and policy in many cities, is a wrong basis for financing this Department or any other department that is, in its proper sense, a municipal enterprise. If you are going to determine whether you are making any money in a municipal enterprise, charges which are occasioned by the existence and continuance and enlargement and improvement of that enterprise, must be paid by it. The same rule follows in ascertaining the expenses properly chargeable to any kind of business or any department in your city government. In the conduct of your Water Department neither the books of the Water Department nor the books of the Treasury Department show per se what the expense of the water works actually has been. Interest on water works bonds has been paid from a bond interest appropriation which has included interest on all of the bonds issued for various purposes. Sinking fund payments have been made from an appropriation to pay sinking funds of various characters. Both of these are, as an accounting proposition, chargeable to revenue and to nothing else. Again, there have been several issues of water works bonds with no sinking fund provision what-And besides this condition, there has also been the condition of issuing refunding bonds with no sinking fund To issue bonds with no sinking fund provision is bad finance. To issue refunding bonds (this being occasioned by the previous condition) without any sinking fund provision is even worse, the result of which, if continued, will place the city in a financial condition which will require very nearly the entire revenue of the city to meet its fixed charges, leaving comparatively nothing for administrative purposes,

At the present time the accounting for this Department, so far as its current revenue and operation expense is concerned, is done by the Water Department and is very well done. The clerks are certainly interested in their work and to them and Superintendent Ballou, I desire to extend my thanks for the assistance rendered and kindnesses shown during the progress of the work. In relation to the collection of the revenue, it is my firm conviction that it is an entirely wrong policy. The receipts of any department should not be collected by it, but by the City Treasurer, who should collect all revenues. There are several matters of detail in the accounting methods that should be changed and there are several matters that could be advan-

SCHEDULE A-FROM THE CITY'S RECORDS AS THEY EXIST

YEAR		Bond	Estimated	Paid Into	Total	Receipts from Water	Receipt, Sinking	Total	Investment in Construction	
<u> Lan</u>	Operation	Interest		Sinking Fund	Expense	and Material	Fund Interest	Receipts	From Taxat'n	From Earn'g
1885 1886 1887 1888 1889 1890 1891 1892 1892 1894 1895 1896 1897 1898 1896 1897 1900 1901 1901 1902 1903 1904	\$6,327.96 6,806.20 7,500.00 4,399.29 7,857.68 8,355.79 8,049.27 8,869.24 9,922.93 9,639.58 10,447.68 11,000.00 11,498.61 11,257.85 12,000.00 12,885.37 13,489.22 13,260.08 14,465.20 14,948.17	\$6,000.00 12,000.00 12,000.00 12,000.00 12,000.00 12,000.00 12,000.00 20,000.00 20,000.00 20,000.00 23,080.00 20,480.00 21,280.00 21,280.00 21,280.00 24,780.00 24,780.00 30,280.00 35,280.00 35,280.00	\$1,620.32 3,070.48 4,814.96 6,300.16 6,300.16 6,323.52 9,323.92 1,759.20 5,380.52 5,780.80 6,869.28 2,046.52 3,397.72 670.08 496.08 1,026.28 1,437.08 526.92 1,246.88 549.64 721.12	\$9,000.00 9,000.00 9,000.00 9,000.00 9,000.00 18,000.00 18,000.00 18,000.00 9,000.00 9,000.00 9,000.00 9,000.00 9,000.00 9,000.00 9,000.00 9,000.00 9,000.00 9,000.00	\$22,948.28 30,876.68 33,314.96 31,699.45 537,181.20 38,680.71 39,808.47 52,249.76 53,703.73 54,508.86 44,574.20 43,877.72 41,248.69 42,433.93 43,306.28 44,602.45 47,796.14 51,786.96 54,294.84 59,949.29	\$9,736.87 14,692.37 15,528.72 12,137.75 19,730.12 22,016.66 24,012.69 28,224.62 31,837.56 33,130.12 37,376.90 54,370.23 61,094.88 61,904.78 66,638.91 74,607.63 79,225.99 87,239.12 90,074.27 95,782.03	\$360.00 720.00 1,080.00 1,440.00 1,480.00 2,160.00 2,880.00 3,600.00 4,320.00 5,040.00 5,760.00 6,120.00 6,480.00 7,200.00 7,560.00 7,920.00 8,280.00 8,280.00	\$9,736.87 15,052.37 16,248.72 13,217.75 21,170.12 23,816.66 26,172.69 31,104.62 35,437.56 37,450.12 42,416.90 59,770.23 66,854.88 68,024.78 73,118.91 81,447.63 86,425.99 91,288.92 95,159.12 98,354.27 104,422.03	\$13,211.41 15,824.31 17,066.24 18,481.70 16,011.08 14,864.05 13,635.78 21,145.14 18,266.17 17,058.74 2,157.30	25,590.85 29,812.63 36,845.18
1906 1907	16,782.30 16,719.65	39,280.00 40,280.00	989.40 1,672.68	9,000.00	66,051.70 67,672.33	99,408.26 105,916.93	9,000.00 9,360.00	108,408.26 115,276.93		42,356.56 47,604.60
	\$251,981.55	\$502,340.00	\$69,532.88	\$243,000.00	\$1,066,854.43	\$1,208,408.33	\$111,960.00	\$1,320,368.33	\$167,721.92	\$421,235.83 167,721 93
										\$253,513.90

tageously introduced and which would add to the value of the accounting and would make it complete.

Schedule A.—This schedule, or table, is a statement of the conditions, actual in some cases, contemplative in others, as they appear on the books of the city. The operation expense, the bond interest expense, the payment to the sinking fund, are actual as taken from the books of the Treasurer. The note interest paid is estimated on a 4 per cent. basis from the actual expense on account of construction. The receipts from water and the sale of material and the receipt of sinking fund interest are actual, while the investment in construction is a deduction from the receipts and expenses. This schedule shows the transactions of the Water Department as they should have been recorded on the books of the city. It is true that all of the expense set up as expense of the Water Department appears on the books of the city in different form, but the method of accounting employed by the city in charging up to the Water Department what rightfully belonged to it to pay, has been as foreign to proper accounting methods as possibly could be imagined. Interest on bonds and interest on notes surely ought to be charged to receipts of operation and maintenance, if it is intended to properly classify the expenses which should be charged to this account; yet they have never as yet appeared as an expense of that character. The statements in the schedule lead to the conclusion that the city has already invested in the water works \$588,957.74, of which \$421,235.82 has been invested from the earnings of the Water Works Department and \$167,721.92 from tax levy. This makes the net amount invested in the water works plant from the earnings of the Department to be \$253,513.90.

Schedule B.—This schedule is a statement of the transactions of the Water Works Department as they would have appeared on the books of the city, if the city's financial methods had been conducted on a sound business basis. The expense on account of operation is actual as taken from the books of the City Treasurer. The bond interest is also actual and is taken from the same source. The sinking fund requirement is the amount of money which should have been placed in that fund to pay the various debts created by bond issues when they became due. The estimated interest on notes is interest at 4 per cent. on construction expense carried on notes, and the total expense is an addition of these four columns. The receipts from the sale of water and material is actual, the interest from sinking funds is the amount which would have been earned by the sinking fund payments on a 4 per cent. basis, if the sums referred to as sinking fund requirements had been paid in to amortize the various bond debts, and the total receipts is an addition of the two columns. The balance column is the difference between the receipts and expenses, those in heavy type showing a loss and those in light showing a gain. On the balance, which shows a gain, a 2 per cent. interest rate on bank balance is allowed, while the next two columns show the investment in construction, the first column (in years when the Water Department would have paid its expenses under these conditions) showing that the investment was from earnings of the Water Works Department, while the second column (in years when the receipts would not have been sufficient to pay the expenses) showing the amount that would have had to be paid from the tax levy.

STREET PAVING IN DETROIT

In a paper before the League of American Municipalities, Mr. E. R. Schreiter, Secretary of the Common Council Committee, described the method employed in paying for the street paving of Detroit. The city is authorized by its charter to do \$300,000 worth of "forced paving" a year; this term being applied to those pavements which are ordered by Council without obtaining the consent of the abutting property owners, the purpose of this being to prevent individuals from blocking progress in any direction by withholding their consent to the paving in front of their property. In addition to this, wherever the owners of a majority of the front feet of a given stretch of street ask that this be paved, the city invariably complies with their request, using the materials requested by the petitioners. This "petition paving" costs an average of about \$250,-000 per annum.

Contracts for the work are let to the lowest responsible bidders. Upon the completion of the work, which is done under the jurisdiction of the Department of Public Works, this Department certifies to the Board of Assessors the cost of laying the pavement, and the assessors spread the whole cost of the work as an assessment against the abutting property on a front foot basis. The cost of paving street intersections, alley openings and in front of property belonging to the city is paid by general taxation. Street and alley intersections are paid for out of a general road fund. Where the assessment is levied against city property occupied by any department, such department asks for appropriations to meet the assessments, which likewise are raised by general taxation.

Only original pavement is paid for by special assessment. After a street has once been paved all charge for its maintenance forever thereafter is borne by general taxation, whether it be for patching, repairing or resurfacing, or even for an entirely new pavement throughout.

Assessments for this work are made out in four parts payable in one, two, three and four years respectively, and special assessment bonds are issued for the amounts

SCHEDULE B-CITY'S RECORDS AS THEY SHOULD APPEAR

YEAR		Bond	Sinking Fund	Est.	Total	Receipts From Water	Interest From	Total	Balance	Interest 2 Per Cent.		MENT IN
IEAR	ation	est	Requirements			and Material	Sinking Fund	Receipts	Januari Co	on Balance	From Earnings	From Taxation
1885 1886 1887 1888 1889 1890 1891 1893 1894 1895 1896 1897 1898 1900 1901 1902 1903 1904 1906 1907	Same as Schedule A	Same as Schedule A	\$25,225.00 25,225.00 25,225.00 25,225.00 25,225.00 34,225.00 34,225.00 34,225.00 34,225.00 29,725.00 29,725.00 29,725.00 29,725.00 29,74.00 20,500.00 26,500.00 26,500.00 33,166.00 33,166.00 38,166.00 34,166.00 44,166.00 44,166.00 45,832.00 45,832.00	Same as Schedule A	\$39,173,28 47,101,68 49,539,94 47,929,4,45 53,406,20 54,905,71 56,033,47 68,474,76 69,928,73 70,733,86 65,299,26 63,147,93 60,231,69 63,147,93 60,806,28 62,102,45 71,962,14 75,952,96 83,460,84 95,115,29 99,453,80 102,883,70 104,504,33	\$9,736.87 14,692.37 15,528.72 12,137.75 19,730.12 22,016.66 24,012.69 28,224.62 31,837.56 33,130.12 37,376.93 54,370.23 61,094.88 61,904.88 61,904.78 66,638.91 74,607.63 79,225.99 83,720.92 87,239.12 90,074.27 95,782.03 99,408.26 105,916.93	\$1,009.00 2,018.00 3,027.00 4,036.00 5,045.00 6,054.00 7,423.00 10,161.00 11,530.00 12,719.00 13,871.64 14,990.96 16,179.52 17,239.52 17,239.52 18,299.52 18,299.52 19,626.16 20,952.80 22,479.44 24,246.08 26,012.72 27,846.00	\$9,736.87 15,701.37 17,546.72 15,164.75 23,766.12 27,061.66 30,066.69 35,647.62 40,629.56 43,291.12 48,906.90 67,089.23 74,966.52 76,899.74 82,818.43 91,847.15 97,525.51 103,347.08 108,191.92 112,553.71 120,028.11 125,420.98 133,762.93	\$29,436.41 31,400.31 31,932.24 32,759.70 29,640.08 27,844.05 25,966.78 32,827.14 29,229.17 27,442.74 16,392.80 3,395.51 14,734.83 13,747.81 22,012.15 29,744.70 25,563.37 27,394.12 24,731.08 17,438.42 20,574.31 20,574.31 22,577.28 29,258.60		\$3,463.41 15,029.51 14,022.75 22,452.39 30.339.63 26,074.63 27,942.00 25,225.70 17,787.18 20,985.79 22,988.02 29,843.76	32,759.7 29,640.0 27,844.0 25,966.7 32,827.1 29,299.1 27,442.7 16,392.3
			\$741,982.00		\$1,565,836.43	\$1,208,408.33	\$293,558.36	\$1,501,966.69		\$5,022.54	\$256,154.72	\$315,001.9

of such assessments. These bonds bear 4 per cent. interest, and the Sinking Fund Commission buys these special assessment bonds, as they are issued, as an investment, thus furnishing the cash for paying the contractor. The bonds are payable from a "special assessment sinking and interest fund," from which the interest also is paid. If an owner has not paid up his assessments at the time the bonds mature he is obliged to pay, in addition to the 4 per cent. interest on the assessment, a penalty of 5 per cent. on unpaid installments and also interest at the rate of 7 per cent.

The special assessment laws of the city have been repeatedly attacked, but still stand with the authority of the courts.

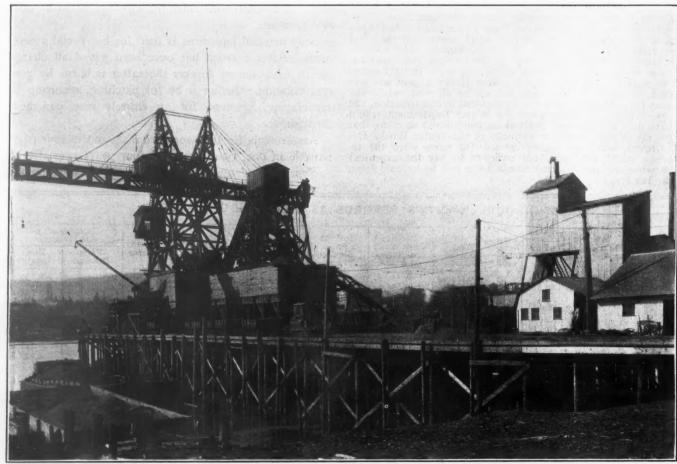
At the close of each paving season the Commissioner of Public Works instructs his superintendents to examine the pavement on all streets in their respective districts and submit a list of those which in their judgment need repaving. The members of the Common Council likewise make similar reports, and the cost of this work as estimated by the City Engineer is passed upon by Common Council as part of the tax budget for the ensuing year. The Appropriation Committee then makes a personal tour of the city, examining all pavements on the list. In the list for 1908, 179 streets were so examined, and recommendations for 40 were refused. This budget is submitted to the Board of Estimate and this board in like manner makes a personal inspection of the streets and makes a final and absolute decision as to how many of those on the list should be repayed the following year.

PAVING PLANT AT PORTLAND

Economical Handling of Pavement Materials by Unloading Plant and Trolley Transportation—Laying Patented Pavement by Open Contract

In the construction of all pavements employing asphalt or cement it is of course necessary for the majority of contractors to obtain these materials from the manufacturers; the exceptions being where the contractor is himself a refiner of asphalt. We believe it is somewhat unusual, however, for the contractor to purchase asphalt paving mixtures or similar preparations mixed and heated ready for laying. Such is the practice, however, in the city of Portland, Ore., where the Pacific Bridge Company has the contract for laying all bitulithic pavement during 1908. This condition is the result of the requirements in this, as well as in several other States, that patented articles may be purchased by cities only where there is competition. In this case, Warren Brothers Company agreed with the city of Portland to sell bitulithic mixture at a definite price per square yard to any contractor. Under this arrangement several bids were received for this class of paving during 1908. Whether this division of the contract results in greater cost to the city we are not informed.

An additional interest is attached to this plant because of its completeness and the expense and labor saving effected by its location and the various devices employed. The crushed rock and sand are brought by water to the plant, which is located at the end of a dock on



UNLOADING PLANT ON DOCK, FOR HANDLING PAVEMENT MATERIALS

the east side of the Willamette river. A Jeffrey unloading plant is used for handling the raw materials, delivering them to elevated bins located adjacent to the tower of the plant. The bucket employed for this work has a capacity of six cubic yards. Electric power is used for the operation of the plant, but fuel is employed for heating the materials. To anticipate trouble which might be caused by settlement or vibration of the dock, the kettles are suspended from the heavy floor beams of the plant.

The paving plant is so arranged that the surface mixture can be taken to the street in either cars or wagons, and the arrangement of the driveway admits of driving under the mixer, thus doing away with the necessity of backing wagons into the mixer in the customary way. For carrying the mixture from the plant to the street the Pacific Bridge Company employs steel side-dump cars hauled by a trolley dummy. These cars are so constructed as to dump clear of the track. The crushed stone for the foundation of the pavement is hauled in small gondola cars, side dumping, which also are hauled by electric dummy.

Excepting details, the same apparatus might be used for asphalt paving plants, and the Portland plant suggests several possible economies in these, especially in the location of the plant and in the methods of transporting and handling both raw materials and pavement mixtures.



SIDE-DUMP CARS, HAULED BY TROLLEY, FOR TRANSPORTING PAVEMENT MATERIALS

CEMENT-LINED WATER PIPE

Prevalence of Its Use and Opinions Concerning It in 1888 and in 1908—Methods of Construction— Advantages and Disadvantages as Compared with Cast-Iron

In a paper read before the New England Water Works Association on December 9, Mr. Leonard Metcalf has collected together considerable information concerning the use of wrought-iron cement-lined water pipe in New England. This article gives the history of the use of such pipe in this part of the country and quotes the general impressions concerning it held by water works superintendents of the towns in question in 1888 and those entertained by the same class of officials in 1908.

Most of the information is given in the form of letters or reports, which are much too lengthy to be reproduced here, although many of the details contained in them are of considerable interest. The author, however, presented at the end of his paper an excellent summary of these various reports and a general conclusion, which are so complete and concise that we quote them entire.

As the use of this kind of pipe has considerably fallen off in recent years and has, with the exception of a few outside cities, been confined to New England, it seems desirable to preface the conclusions with a description of how this pipe was manufactured and laid.

Types of Construction

Two general methods of building wrought-iron cement-lined pipes have been used in this country: the first, known locally, perhaps, as the Goodhue & Burnie pipe; the second, what is known as the Phipps patent.

The Goodhue & Burnie pipe was generally made by riveting up sheets of wrought-iron, single riveted with cold rivets, without any attempt to make the joints water-tight, and lining this wrought-iron shell with from 3/4-inch to 1-inch of neat Rosendale cement, or cement mortar mixed one part of cement to one part of sand. This work was generally done in a central plant, or at different points along the pipe line, from which the pipe

was carried to the trench, there imbedded in Rosendale cement mortar laid along the bottom of the trench, and then covered over the sides and top with a 34-inch to Iinch layer or casing of Rosendale cement mortar plastered on with rubber gloves or trowel in the hands of the pipe maker. The trench was generally backfilled immediately or shortly after laying the pipe.

The pipes were made in lengths of 9 feet, and the joints between the pipes were made by means of a sleeve of wrought-iron with inner and outer casing of cement, or by making the pipe tapering so that the end of one pipe was fitted into the end of the next. In the larger mains the joints were often plastered on the inside after laying; in the smaller ones, this was, of course, not attempted.

The Phipps patent pipe was generally made and coated without as well as within with a 34-inch to 1-inch layer of cement or cement mortar, the outer coating being held in place by a thin sheet of wrought-iron which subsequently rusted out in the trench. This outer sheet was of distinct advantage, however, as a protection to the outer cement coating in the handling and laying of the pipe.

In a few cases cast-iron bells and spigots have been riveted to the wrought-iron sheets before making the pipe, and the joints have then been made in the ordinary manner with lead tightly calked in place or by the use of cement mortar.

More recently, under the Phipps patent, a type of cast-iron ring has been developed which is driven home in each end of the pipe—one of the rings being a female ring, the other a male ring-thus more rigidly holding the end of the pipe and preventing injury to it in transportation and laying, and incidentally making more convenient the placing of the outer cement coating of the pipe, which is made of grout poured into the mold between the inner and outer sheets, with the pipe standing on end. The joint between pipes is made finally by the use of a sleeve as heretofore.

So far as the writer is aware no cast-iron joint has thus far been developed which has proven thoroughly satisfactory and advantageous from the standpoint of

It is perhaps worthy of note that, while blue annealed arought-iron sheets imported from England were used in many of the early installations, in making the later ones steel has been substituted at some saving in cost, though not in durability.

OPINIONS OF WATER WORKS SUPERINTENDENTS

The views expressed in 1888 by various water works superintendents, and those obtained in 1908 by Mr. Metcalf, are given below:

1888. 1908.

BOSTON, MASS. Gave it up on account of Using cast-iron pipe only. rusting and bursting.

BROCKTON, MASS Reports cement-lined pipe all No distribution pipe. Only three miles supply pipe.

Brooklyn, N. Y. right and no leaks.

Using cast-iron pipe only. Used it from 1859 to 1884 and gave it up as unserviceable.

CAMBRIDGE, MASS. en years. Using cast-iron and steel None laid for fifteen years. pipe.

CHELSEA, MASS.

Used some such pipe for None retwenty-one years and its con- iron only. None remains. Using castdition is fairly good, but cast-iron pipe was found to be more reliable and economical

CONCORD, N. H.

Has used cement pipe for Began replacement in 1898. sixteen years. It is in good Fourteen out of twenty-eight miles in 1887 now in use. condition.

FITCHBURG, MASS.

Used it from fourteen to Using cast-iron pipe. seventeen years, but gave it up because repairs cost more than the change to cast-iron pipe.

HARTFORD, CONN. Has twelve miles of cement-Using cast-iron pipe. lined pipe and has used it for twenty-five years, but it has much trouble breaks.

MALDEN, MASS.

Laid some twenty years ago and is replacing it with cast-Using cast-iron pipe.

MANCHESTER, N. H. Cast-iron pipe. Used it for fifteen years, but is not laying any more on ac-count of leaks and breaks.

MERIDEN, CONN.

Has used it since 1869. Cast-iron pipe. Condition poor.

NEW BEDFORD, MASS. Considers it unreliable. Cast-iron pipe. NEW HAVEN, CONN.

Considers it reliable and con-Cast-iron pipe. templates no change.

New London, Conn.
Count lay: a Eight miles (out of twenty-Would on no account lay a Eight miles (out orge main of cement-lined two in 1886) remain. pe, and small mains only large main of with the best of materials and workmanship.

PITTSFIELD, MASS. Used it since 1855. Condi-None remains. tion good so far as known.

PLYMOUTH, MASS.
pipe exStill using cement-lined pipe
exclusively. Giving good satis-Using cement-lined pipe exclusively. faction.

PORTLAND, ME. experi- Cast-iron pipe only for dis-After twenty years' experience has taken all the cementlined distribution pipe up because it could not stand the pipe or steel mains will probpressure. Supply mains in ably soon be laid. good condition.

Providence, R. I. treach- Cast-iron pipe. Considers the pipe treach-

SALEM, MASS. In use for twenty years and Appropriations recently made considered good. replace cement-lined pipe with cast iron.

Somerville, Mass.
Using cast-iron pipe. Eighty breaks a year. WALTHAM, MASS

Reports that as pipe is be Only one mile of it remains. ginning to rust no more of it will be laid.

WOBURN, MASS. In 1899 abandoned further Reports it perfect for presof sixty to ninety-five extension work of pounds. Does not contemplate lined pipe in favor of cast-iron change.

Worcester, Mass. Had a little in use for twelve None remains. to sixteen years, but the condition is poor, owing to frequent leaks.

SUMMARY OF CONCLUSIONS

With due allowance for variation in individual cases, and the local conditions or circumstances surrounding them, the following conclusions seem justified:

1. Advantages of cement-lined pipe as compared with cast-iron pipe.

STATISTICS RELATIVE TO THE USE OF CEMENT-LINED MAIN PIPE

COMPILED FROM INTERVIEWS AND FROM REPORTS. SOME FIGURES NECESSARILY APPROXIMATE ONLY

No.	City or Town	Popula- lation in 1905	Works Built	LENGTH PIPE IN		Total Miles Ex- tension, 1886 to 1906	Extensions of C. L. Abandoned	Replace- ment Begun	Reason Given for Abandonment
1	Attleboro, Mass	12,702	1873	16	None	About 36	1880	• 1898	Trouble making connections.
2	Arlington, Mass	9,668	1872	About 12	4		1872	Ab't 1895	
3	Brockton, Mass	47,494	1880	3	3	69		110	
4	Beverly, Mass	15,223	1869	48	32	Over 19	1894	Ab't 1895	Poor condition of old pipe.
5	Burlington, Vt	18,640*	1867	19	4	11			Tool tool and proper
6	Chelsea, Mass	37,289	1867	23	None		1875	1875	Leaks caused by making connec'ns
7	Concord, Mass	5,421	1874	21	21	12	1888	Not begun	
8	Concord, N. H	19,632*	1872	Over 30	18	34	1887	1898	Breaks from rust.
9	Fitchburg, Mass	33,021	1873	17	None	40	1877	1883	
10	Gloucester, Mass	26,010	1884		19		1896	1896	Poor condition.
11	Hartford, Conn	79,850*	1857	15	3		1884	1886	Frequent breaks; expense of re-
12	Lee, Mass	3,972	1883	10	10		1883	Not begun	
13	Lynn, Mass		1871	63	32	30	1884	1890	*
14	Malden, Mass	38,037	1870	About 45	20	35	1890	1892	
15	Manchester, N. H	56,987*	1872	27	4	62	1877	1877	Trouble in making repairs.
16	New London, Conn	17,548*	1871	22	About 8	39	1889	1889	9 1
17	Pittsfield, Mass	25,001	1855	3	None				Freezing. Poor workmanship.
	Plymouth, Masst	11,119	1885	23	47	24	‡		1
19	Revere and Saugus, Mass	$\left.\begin{array}{c} 12,659 \\ 6,253 \end{array}\right\}$	1884	About 18	18		1894	Not begun	Lessened cost of cast iron.
20	Springfield, Mass	73,540	1864	48	33	80	1882	1886	
21	Waltham, Mass	26,282	1872	20	1	21	1887	1887	Leaks in joints; trouble in making
1-1									connections.
22	Watertown, Mass	11,202	1884	14	13		1890	Not begun	Cement pipe could not be obtained; trouble from electrolysis.
23	Whitman, Mass	6,521	1883	12	12	12	1883	Not begun	No appliances for making C. L.; C. I. more convenient.
24	Woburn, Mass	14,402	1873	39	51	18	1899	Not begun	Lightning, rust, bad joints, thin lining.
25	Worcester, Mass	128,135	1845	41	None	97	1880	Ab't 1880	

Statistics Relative to the Use of Cement-Lined Main Pipe (Continued)

			(00,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
No.		Pressure lbs. per Square Inch	Average Annual Cost of Making Repairs per Mile of C. L. Pipe	Trouble From Lightning
1 2 3 4	25 years 23 " 26 "	65–100 50–90 50 72	\$15.00 per leak 48.00 (1899-1906)	1 accident. 2 accidents; 1 cost \$974 3,000 ft. required replacement.
5 6 7 8 9 10 11 12 13 14 15	8 " 26 " 10 " 12 " 29 " 19 years 22 " 5 " 18 "	70-85 50-75 45-75 75-165 15-75	5.00 17.00 (1900-06) 20.00 about 30.00 about	1 accident. Some trouble. 400 ft. replaced. Considerable trouble. 1892 damaged 2,000 ft. Considerable. 1 accident. 1 stroke caused dam-
17 18 19 20 21 22 23 24	22 years 15 " 13 " 	60 50 70 30–120 50–70 65 70–75	13.00 (1902-06) 10.00 (1905-06) 10.00 (1900-06) 17.00 (1883-91) 3.00 (1906) Very small 14.00 (1891-06) 52.00 (1884-86)	age \$940. Some trouble. 1 accident. 1,400 ft. replaced; 4 accidents. None. 200 leaks; 5,000 ft. replaced.

a. Freedom from tuberculation and resulting maintenance of carrying capacity.

b. Carrying capacity probably approximately that of

cast-iron pipe 15 to 25 years old. The coefficient of discharge to be used in the Hazen and Williams formula probably lies between c=100 and c=120, depending upon the care used in making the pipe and the excellence of its finish.

- c. Longevity and durability under favorable circumstances.
- d. The cost may show some advantage when cast-iron pipe reaches a price upwards of \$27 to \$30 per ton.
- 2. Disadvantages of cement-lined pipe as compared with cast-iron pipe.
- a. Absolutely and relatively greater dependence upon good material and good work in all details of manufacture and laying of pipe.
- b. Greater danger of bad or slipshod work in wet trenches and under conditions affording insecure foundations.
 - c. Greater cost under average market conditions.
- d. Unreliability and danger from subsequent excavations adjacent to pipe line.
- e. Small factor of safety and consequent danger from water hammer, careless manipulation of gates, etc. (The usual factor of safety of wrought-iron cement-lined pipes has been from 3 to 4; in steel pipes from 4 to 5, and in cast-iron pipes from 12 to 15, but the greater ductility of wrought-iron or steel as compared with cast-iron should be borne in mind in this comparison.)
- f. Resulting comparatively low limit of safe pressures, 65 pounds per square inch, more or less.
- g. The carrying capacity may not differ materially from that of old cast-iron pipe if the cement-lined pipe

is badly made or laid, or is considerably smaller in actual than in nominal internal diameter.

- h. Danger from lightning and liability of more extended damage from it.
- i. Difficulty in making water-tight joints and connections.
- j. Repairs not so easily, cheaply, quickly, or effectively made as for cast-iron pipe.
- k. Difficulty in making service pipe connections and greater likelihood of leakage.
- 3. Satisfactory data are lacking upon the carrying capacity of cement-lined pipes. It is believed that under favorable conditions the coefficient of discharge to be used in the Hazen and Williams formula is about c = 120, but under actual conditions this coefficient has been found, in several carefully observed cases, to lie between 95 and 110. Unless the conditions are definitely known, therefore, the use of a coefficient not exceeding c = 100 to c = 110 in the Hazen and Williams formula is recommended.
- 4. The relative carrying capacity of wrought-iron cement-lined pipe, new cast-iron pipe and old cast-iron pipe, based upon assumed coefficients of discharge (for use in the Hazen and Williams formula) is in proportion to these coefficients of discharge:

c = 120 for wrought-iron cement-lined pipe.

c = 130 for new cast-iron pipe.

c = 100 for old cast-iron pipe.

5. The comparative frictional losses based upon these assumptions are shown in a table (not reproduced).

6. Upon the above assumptions the necessary increase in diameter of a cast-iron pipe line over that of a wrought-iron cement-lined pipe line, that it may have the same discharging capacity at the end of a period of twenty-five years, more or less, should be approximately 10 per cent. If, however, the relative coefficients of discharge for cement-lined pipe, as compared with cast-iron pipe, are as 110 to 100 instead of 120 to 100, the necessary increase in diameter would be approximately 4 per cent.

7. The additional cost involved by the above-mentioned necessary increase in diameter of cast-iron pipe over cement-lined pipe, that they may have the same carrying capacity after a long period of years (based upon assumed relative coefficients of 120 for cement-lined and 100 for old cast-iron pipe), is approximately 7 per cent. If, however, the relative coefficients are as 110 to 100, the increase in cost would be but 3 per cent.

8. The cost of wrought-iron cement-lined pipe as compared with cast-iron pipe does not appear to be materially different and is slightly in favor of the cast-iron pipe up to diameters of 20 inches, more or less—if a comparison be made upon the basis of use of Classes A and B, Standard Specifications for Cast-Iron Pipe of the New England Water Works Association, which in the opinion of the writer is certainly as reliable as, and probably more reliable than, wrought-iron cement-lined pipe of the type heretofore used.

9. For purposes of comparison it seems reasonable to use an average price for cast-iron pipe of \$25 per net ton of 2,000 pounds, inasmuch as this figure seems to

approximate the average cost of cast-iron pipe for a period of twenty-five or more years in the past.

10. While it is true that many wrought-iron cement-lined pipe systems, built between the years 1870 and 1880 or thereabouts, are still in use, general experience seems to show that abandonment has begun within a period of 20 to 25 years after construction, though it is probably fair to say that this abandonment may have been due in some measure to the gradual increase in water pressures demanded of our water works by the change in height of buildings and the improved standards required for fire protection. Certainly the general use of cement-lined pipe for water works has been given up.

II. The average annual cost of making repairs to wrought-iron cement-lined pipe appears to have been as low as \$10 per mile of pipe under favorable circumstances, and as high as \$50 per mile of pipe, or even more, under less favorable circumstances.

12. Damage from lightning appears to have been a source of considerable expense in making repairs. The cost of these repairs is covered, however, in the above figures of annual cost of repairs per mile of pipe.

GENERAL CONCLUSION

In conclusion, therefore, the writer is of the opinion that, broadly speaking, it may fairly be said that:

I. Experience in this country with wrought-iron cement-lined pipe systems for distribution purposes has in general been adverse and has led to its replacement with cast-iron pipe—except, perhaps, under conditions where the pressure does not materially exceed 65 pounds per square inch, and where there has been but little disturbance of the ground adjacent to the pipe trench which might cause settlement or other injury to the pipe line.

2. Experience in this country with wrought-iron cement-lined pipe systems for supply mains has been much more satisfactory than for pipe distribution systems, and many old wrought-iron cement-lined supply mains are still in active use and giving satisfactory and economical service, particularly under such conditions as are usual in the case of these supply mains—light pressure, secure foundations, and private rights of way within which the pipes are located, resulting in little danger of disturbance.

3. It is still possible that economical means will hereafter be developed for lining steel or even cast-iron pipe in a similar manner to that so successfully now employed in lining service pipes with cement, which will result in a better pipe than any yet used. But such use of cement is likely to be limited to furnishing a durable coating rather than water-tightness and added strength to the pipe.

The American Pipe Manufacturing Company of Philadelphia has manufactured and installed a cement-lined wrought-iron pipe in following cities:

Springfield Water Company, Lansdowne, Pa.
North Springfield Water Company, Bryn Mawr, Pa.
East Jersey Coast Water Company, West Asbury Park, N. J.
Wildwood Water Company, Wildwood, N. J.
Moorestown Water Works, Moorestown, N. J.
Riverton Water Company, Riverton, N. J.
Norfolk County Water Company, Norfolk, Va.
Sumter Water Company, Sumter, S. C.

Paris Mountain Water Company, Greenville, S. C. Tallahassee Water Company, Tallahassee, Fla. Milledgeville Water Company, Milledgeville, Ga. Opelika Water Company, Opelika, Ala. La Grange Water Company, La Grange, Ga. Derry Water Company, Derry, Pa. Skaneateles Water Company, Skaneateles, N. Y. Jordan Water Works, Jordan, N. Y. Whether or not it was in all or most of the

Whether or not it was in all or most of these cases considered satisfactory, Mr. Metcalf had not ascertained at the time of the presentation of his paper.

TESTING CONCRETE IN SEA WATER

Tests to Be Conducted at the Charlestown Navy Yard— Specimens to Be Placed Partly In and Partly Out of Sea Water

Tests of the effect of sea water on concrete are to be conducted at the Navy Yard at Charlestown, Mass., under government supervision and with the cooperation of the Aberthaw Construction Company, of Boston. Mr. H. L. Sherman, a cement chemist of the same city, will have immediate charge of the tests. The test specimens are to be built in accordance with the requirements of the Navy Department and under their direct supervision. Specifications have been prepared giving exact instructions for the preparation and testing. The preparation of specimens and the tests are to be made as nearly as possible in conformity with usual commercial work.

Twenty-four of the test specimens are to be in the form of piers 16 inches square and 16 feet long. These are to be placed in sea water so that the lower two feet only will be permanently immersed, it being thus improbable that the top will never be. There will also be fifteen cubes, 8 inches on a side, mixed I Portland cement, I sand and 2 stone; and fifteen similar ones mixed 1:3:6. One third of the cubes will be permanently immersed in sea water; another third will be placed at about half tide, and the remainder will be kept permanently above water but exposed to the weather. In addition, briquettes will be made with standard sand for the purpose of comparing the materials used. The ordinary mechanical and chemical tests of the cement will be made. Sand and stone will be subjected to physical and mechanical analyses to determine relative size of grains and amount of foreign matter. All other materials and the sea water also will be tested.

The mixtures for the piers will be as follows: Three mixed 1:1:2; three mixed approximately 1:2:4, but so that excess of cement over sand voids will be 10%, and that of mortar over stone voids 10%; three mixed 1:3:6; one of each of the above groups being mixed quite dry, another plastic, and the third very wet. Two others will contain Portland cement free from iron, one mixed 1:1:2 quite wet, the other 1:3:6 wet. Two will contain Portland cement high in alumina, one mixed 1:1:2 wet, the other 1:3:6 wet. Two others will be proportioned the same, but use cement low in alumina. Two will contain iron ore cement practically free from alumina, one mixed 1:1:2, the other 1:3:6, both wet. Two will use slag cement, mixed 1:1:2 and

1:3:6, both wet. Another will be 1:3:6, but mixed with extreme thoroughness and quite wet, and another the same but using sea water. Another will contain 9/10 part by weight of Portland cement, 1/10 part hydrated lime, 3 sand and 6 stone, mixed wet. Another will contain a 1:3:6 mixture of Portland cement, with the addition of Sylvester mortar. The twenty-fourth will be mixed 1:3:6, but contain in addition finely pulverized clay to the amount of 5% by weight of the cement used.

All the materials will be thoroughly mixed in a batch concrete mixer, for at least two minutes after the last ingredient is added. The concrete will then be placed in forms as quickly and continuously as possible; the forms being of planed and matched spruce, braced to absolutely prevent springing. The piers will be reinforced with embedded steel bars about \(\frac{5}{8} \)-inch square, bent to a U-shape and run throughout the length of the pier near two diagonally opposite corners; the loop to project and serve as a handle. A hole 3 inches in diameter will be cored in the upper 8 feet to permit examination from time to time to see if water has penetrated through the concrete.

The cement is now being delivered and the various grades tested and analyzed. On the completion of this the making and immersing of specimens will be begun at once.

THE "GOLDEN RULE" POLICE POLICY

Chief Kohler, of Cleveland, Ohio, States Result of One Year's Operation of This Policy—Arrests Reduced Two-Thirds

REPORTS from Cleveland would indicate that the Police Department there has, during the past year, been carrying on an experiment which should be of the greatest interest to every city in the country. To Fred. Kohler, Chief of Police of that city, is due the credit for introducing the "Golden Rule" system of treating drunks and small offenders generally. To use Chief Kohler's words "We are treating men as men; even when they are drunk, even when they disturb the peace, even when they insult the dignity of a policeman. We often make arrests; but even then we deal with our prisoners as citizens, as human beings. And we all like the change; not only the offenders but the policemen."

"For many years I have given confused study and some not very enlightening observation to the numerous arrests made for minor offenses. I couldn't see that these wholesale arrests did any good. The number of them did not diminish; it increased. And I found that the arrests not only did not produce good results; they did harm. They brought disgrace, humiliation and suffering to countless innocent persons in no way responsible for the acts of a thoughtless, careless, mischievous, or even if you will, a malicious first offender. Think a moment, and you will see out of your own experience how true this is. Certainly it was borne in upon me, that something was wrong.

"I found daily at these stations relatives and friends

in tears seeking the release of some prisoner, who, when I inquired, proved to be not so very, very bad. In Police Court the next day I saw old and feeble parents, weeping wives with crying babies in their arms, and very often other children clinging at their sides-all there to witness the degradation of those they loved. And what was the result? A hasty trial, and since the offense was usually trivial, the prisoner was discharged. Good! But all that suffering was in vain. Sometimes it was worse than vain. Sometimes a friend interceded in the prisoner's behalf and he was released. Perhaps a lesson in 'pull.' Perhaps the prisoner and his friends perjured themselves—you know how often that happens —and a greater crime was committed. Again sometimes the offender was fined. That was 'a result,' but who paid? The weeping mother and children; they were robbed of the necessities of life and the only gain was a few paltry dollars paid into the City Treasury. Was there one particle of real good accomplished by this process? Watching it all as I did, day after day, I answer 'no,' and I say now emphatically, 'no.'

"Now, questioning these unfortunates, it struck me that most of them did what they did through thoughtlessness, natural passion, or in a spirit of frolic or mischief. It seemed to me that this should be understood. It didn't seem at first to be the policeman's duty to study the case and to use discretion. That was the judge's part. But following the cases from the time the persons were thrown into prison to their arraignment before a Police Magistrate, I noticed that, as a rule, the bench showed little sense of the character, and less knowledge of the habits and environment of the offender. The judge had not, of course, seen the offence committed, and he couldn't comprehend the exact situation or the conditions. Or perhaps he was a politician; in that case the arresting policeman was the person put on trial, censured and insulted. There was a misunderstanding all around; and misunderstanding is injustice."

The intimate knowledge which the Chief obtained of the petty criminals as well as their crimes convinced him, as a practical man not as a theorist, that with some crime is a disease, with others a lack of proper education or healthy environment, and with yet others inability to resist temptation. He realized a difference between a thief and a mischievous man or boy. The only way he could see to fit the treatment to this distinction was to permit policemen to exercise the discretion which the judges frequently could not or did not. He discussed the subject with the officers and men of the force and they decided together that

"First: Juveniles were never to be placed in city prisons. They were to be taken home or the parents sent for and the child turned over to them with a warning for parental correction.

"Second: Intoxicated persons were to be taken, or sent home, unless it seemed necessary for the protection of their lives or their property to confine them until sober, and in that case they were to be allowed to plead guilty and, by signing a waiver of trial, let go without appearing in court. And for your information I might add, that under this system of so-called Sunrise Court,

during the year of 1907 there were 7,738 persons released by signing such a waiver without any further punishment.

"Juvenile and intoxicated persons are cited herein only because they appear to be in the majority, but apparent offenders of any misdemeanor charges are warned and released by simply taking their name and address, unless it can be shown that the offense was committed with malice and forethought, with the intention to injure the person or property of another. And I might add, that this policy has also been applied even where it seemed apparent felonies had been committed."

A less important result of this practice was that the men of the force were saved many hours of duty in court, the city was saved thousands of dollars in witness fees, the judges and court attaches were saved much work, and politicians and shyster lawyers were deprived of an undesirable source of revenue. This plan was put into operation in January, 1908, and its result in the number of arrests made each month is shown by the following table.

Arrests Before and Under "Golden Rule" Policy

	Number 1907.	Number 1908.	Per cent. of those in 1907.
January	2158	911	42
February		829	37
March		939	35
April	2434	907	37
May		888	32
June		882	35
July	2900	1010	35
August		1015	35
September	2510	707	28
October	2351	704	30
November	2530	619	24

Totals	27.983	9,411	33.6

It is seen that the percentage of arrests has been decreasing pretty uniformly throughout the year; an indication that advantage is not taken of apparent leniency by "petty criminals."

Reports and complaints have diminished at a corresponding rate. Officers, detectives and patrolmen are able to devote more time to the pursuit of the habitual criminal and to crimes of a serious nature. This in turn has resulted in driving from the city practically all those whose livelihood depends upon swindling and robbing, and those which remain are under such close observation that it is almost impossible for them to operate successfully.

This policy, Chief Kohler considers as an extension of the one which has been in operation in Cleveland for some time—that of preventing violations of the law instead of merely punishing them. His object as developed so far, and his aim in any future policies which may be adopted, is not only to prevent crimes but as a consequence to prevent criminals. Arrest and imprisonment of first offenders have been recognized as being too generally the cause of confirming them in a criminal career. He believes that the Cleveland method will do much toward instilling in them a respect rather than a hatred for the law, and a resolution to be good citizens rather than to "get square" with society for their punishment.

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Purification of Water or Sewage

We call the especial attention of sanitarians to the article on another page describing the writer's opinion as to the relative places which should be assigned to the purification of sewage and that of city water supplies. Sewage purification, he believes, should be undertaken only with the idea of avoiding pollution, and not for protecting water supplies. He does not consider the legal points involved (the courts themselves disagree on those), but reaches his conclusions solely from a common-sense and scientific analysis of the *pros* and

We believe his conclusions are correct. Practically no sewage purification plants, although they do greatly reduce the number of bacteria, attempt to produce effluents safe as drinking water. To do so would involve a prohibitive expense, especially in districts where coarse sand is not found; since to effect this would require, so far as we at present know, filtration or irrigation, or possibly some method of sterilizing. But even assuming that all cities and towns provided with sewerage systems discharge only safe effluents into the streams, there are still numerous other sources of contamination which must be provided against; these including private sewers, the wash from outhouses, and surreptitious emptying of polluted matters into streams; matters discharged or thrown overboard from boats; waste waters from factories, and the like. It is doubtful if any amount of supervision can ever prevent all of such pollution throughout a large, populated watershed. Consequently, safety of city surface water supplies can be obtained only by a direct purification of them.

It is true that the cost of water purification would in many cases be lessened by more complete purification of tributary sewage effluents. But the cost of the latter would be many times the saving in the former, and the practice would be very uneconomical from a broad point of view.

The "Golden Rule" Policy

Possibly no policy adopted in past years in connection with the treatment of petty criminals is in reality more radical than that pursued in Cleveland last year and described on another page. Chief Kohler has trusted the members of his force to use their discretion in making arrests for petty offences, and his policy is to keep such offenders from the court whenever possible, and their names from the records. The results appear to be good. In a letter received from him as we go to press we learn that the arrests for the entire year were but 33.1 per cent, of the number during 1907. The arrests for felony in 1908, however, exceed in number those for 1907 by about 7 per cent., showing that leniency was not extended to actual criminals, but that the police had more time for pursuing these when that consumed by making arrests and court procedures connected with petty misdemeanors was reduced. Another reform now contemplated is the elimination of a large percentage of arrests made on complaint of citizens. Last year 68 per cent. of such complaints were dismissed by the Judge.

SEWAGE PURIFICATION vs. WATER FILTRATION

Filtration Generally Necessary When Supply Is from Rivers or Lakes—Avoidance of Nuisance the Proper Basis of Sewage Purification—City Sewage Not the Only Source of Contamination of Rivers

By GEORGE C. WHIPPLE

Paper read before the American Society of Municipal Improvements at Atlantic City, N. J.

WATER filtration and sewage purification are not antagonistic, as might be inferred from the title, any more than the hammer and the mallet of the carpenter's chest are antagonistic. Both of these tools are needed and they are handled by the craftsman in a somewhat similar way, yet each has a particular use. The skilled workman always knows which tool to use; the apprentice and the amateur sometimes use the wrong tool. So it is with the two sanitary measures referred to. Water filtration is an agency for rendering a natural water or a polluted water clean and wholesome; the various methods of sewage purification are primarily agencies for helping to dispose of the fecal and industrial wastes of a community without nuisance. Both are alike in that they seek to remove objectionable or polluting substances from water; but in one case the pollution of the water to be treated is relatively small and can be easily and cheaply removed, while in the other case the polluting matters of sewage are large in amount and can be removed only at considerable expense. So obviously simple is this proposition that it seems strange that municipalities should ever attempt to use the wrong tool. Yet in the protection of public water supplies the attention of the public is sometimes distracted from water filtration by plausible arguments in favor of sewage purification. The attempt is made to use the mallet, when the hammer would be more effective.

Take, for example, the case of a certain city situated on one of our large lakes. Like many other cities similarly situated, it discharged its raw sewage into the lake with little expense and with little or no nuisance to sight or smell; it also took its water supply from the same lake, and the natural consequence was a high death rate from typhoid fever. In the course of time the city awakened to the danger, and the question of filtering the water was agitated. All the official sanitary advisers and most of the citizens favored this; but others said, "No, let us purify the sewage and the wholesomeness of the water will follow as a matter of course." This idea may have had its animus partly in political circles, but it was a plausible suggestion and was accepted by many. Water filtration ultimately triumphed, but its introduction was retarded by a discussion based on false premises.

Again, take the case of a large river with many communities along its shores, some using the waters of the stream for drinking purposes, and all, perhaps, using it as a place of depositing sewage. Suppose that all these communities had sewage purification plants of the ordinary type which discharged their effluents into the river, would the water supplies of the down-stream communities be safe? By no means. Ordinary sewage purification plants do not turn out drinking water, while

the mere presence of a large community upon the shores of a stream, with all the necessarily involved opportunities for occasional or accidental contamination, is in itself a menace to a water supply taken from the stream below it.

To adequately safeguard the purity of public water supplies taken from rivers and lakes in populous regions there is only one course to pursue and that is to filter the water. If the water is but slightly polluted filtration is sufficient; if the pollution is considerable, chemical treatment or double filtration should be used or the pollution should be reduced by means of proper sewage disposal plants. There are some cases now, and as the country grows these will become more numerous, where both sewage purification works and filter plants are necessary, but under most conditions water filtration logically should be put first, for it costs less and is more efficient. Of course, this statement, like all general statements, is not without exception, and some cases undoubtedly exist, as the speaker well knows, where to thoroughly purify a very small amount of sewage that is endangering a large water supply is cheaper than to filter the entire water supply.

Some may think that there is no occasion for calling attention to this question of the relative importance of water filtration and sewage purification, but a study of the articles that are appearing in the popular magazines and papers of the day indicates that so far as the protection of water supplies is concerned there is a tendency to place the emphasis in the wrong place. In some states, as in New York, the State Department of Health has authority to compel a city or town to install sewage purification works, but has no authority to compel the filtration of water. Plans for sewer systems have to be examined and approved by the Health Department, but plans for water works systems do not have to be so approved. This condition is scientifically illogical and deserves correction.

The speaker has never forgotten the remark made to him a few years ago by a distinguished German sanitarian who was visiting this country for the purpose of studying the admirable sanitary work of the Massachusetts State Board of Health. He said: "It is all very fine, but very funny. You purify your sewage but you drink your water raw." It was contrary to sanitary science, as he knew it.

What has brought about this condition? It is partly due to the natural feeling that is expressed in the saying that "innocence is better than repentance" and that "pure water is better than purified water." Taken literally, no one can question the soundness of this principle. The difficulty is where to find the water supply that is naturally pure, or that is not liable to pollution.

It is due partly to a natural feeling of repugnance at the idea of allowing the waters of streams to be contaminated and then spending money to purify them. To this it may be said that it is only a question of time and place when and where the contamination is removed; in one case the fecal matter is largely, but not wholly, removed from the sewer water before it reaches the river, while in the other case it is removed from the river water more effectively at a point nearer the consumer. The essential thing is that some purifying mechanism stand between the source of pollution and the water tap and it is not a question of where this is but how efficient it is.

Sewage disposal is attracting public attention for another reason. There have been recently some remarkable improvements in methods of sewage purification. These took their origin in England from whence they have spread to other countries and to America. Unquestionably, these methods are interesting and deserve attention, but it ought not to be forgotten that they took their rise in a country where the water supplies are almost universally filtered. Water filtration in England was an old story a generation ago. England, because of her dense population, has advanced to the second stage where she demands both sewage purification and water filtration. America ought not to take the second step before the first. She will not do so if she follows the advice of her trained sanitarians instead of the amateurs who seize upon the striking topics of the hour and do not consider the subject in a broad, conservative way.

As an illustration of the effect of popular sanitary writings, an instance may be mentioned that once came to the speaker's notice.

A wealthy man, owning a large estate, went to an expert for advice as to the question of sewage disposal. He had been reading the "House Beautiful" or something like that, and had learned that sewage must be treated by two processes, one the aerobic and the other the anaerobic. He could pronounce these words glibly and knew what they meant. He also knew that a septic tank and a contact bed would give the two processes an opportunity to work; and being a man of action as well as thought he had constructed such a plant near his house. The result was that the family had to move out for a time until the caretaker, a commonsense farmer, who did not understand the difference between a septic tank and a cess-pool, succeeded in conveying the tank effluent into some tile drains hastily laid. This change resulted in an entire elimination of the nuisance as there was an unlimited acreage available. Yet the enthusiastic reader of the "House Beautiful" still felt so much anxiety because the sewage was not being purified aerobically and anaerobically that he was willing to pay for expert advice in order to see how these desirable processes could be secured. He was told that his farmer was entitled to the fee as he had already solved the problem.

But deeper than all this is the popular demand for decency. The watchword of the day is *cleanliness*. Cleaner houses, cleaner streets, cleaner food, cleaner politics and cleaner lives are things that the world is striving for. Since the day when the bacteriologist

proved that dirt is dangerous there has been a wonderful response to the sanitarian's call for cleanliness and it has had wonderful results, as the vital statistics show. It is not surprising, therefore, that cleanliness for the sake of health should be followed by cleanliness for its own sake. With this demand for decency the speaker is in hearty sympathy. But the science of sanitation is a new science, and it is easy for false theories to take root and for sound theories to become overworked. Amid the brilliant researches that are being made there is needed the saving grace of common-sense.

This country is growing rapidly and the cities are growing faster than the rural districts. Manufacturing is increasing and the factories are naturally locating along the watercourses. The waters of our rivers are therefore becoming foul to an increasing extent, doing great damage and in some cases irretrievable injury. This is a serious matter; for if, by increasing our capital in the form of factories and mills, we decrease it in the form of natural resources, then we are not, as a nation, growing rich as rapidly as we think. Already some streams in America are as greatly polluted as many in England, as, for instance, the Passaic River, in New Jersey, about which so much is just now being said.

To restore these polluted streams to their pristine purity will be impracticable, if not impossible; but they can be prevented from becoming a nuisance to sight and smell and a menace to health by a rigorous policy of exclusion or purification of sewage and trade wastes, and the speaker believes that this ought to be done before, rather than after, the streams have become overcharged with pollution.

During the past few weeks a notable event has occurred in England. The Royal Commission on Sewage Disposal, after several years' study of the whole matter, has submitted its report and formulated its findings, placing its official approval on some of the modern methods of purification and cautioning against some of their weaknesses. As a sane, common-sense document this report is worthy of great commendation and its influence ought to be widespread in the sanitary world. Much criticised in the past for not immediately accepting each new theory as soon as propounded, the scientific conservatism of this commission will give its report added weight in years to come.

One thing is conspicuous throughout this report of the Royal Commission, viz., that the whole question of sewage disposal is treated from the standpoint of nuisance. It is recognized that disposal works are to be operated to avoid offensive conditions, not to protect water supplies. The degree of purification is to be adjusted to the stream into which the effluent is discharged. Disposal by dilution is tacitly recognized as a sensible and legitimate form of treatment. Nature's methods of purification are to be availed of so far as they are capable of acting.

To quote from the report: "We are satisfied that rivers generally, those traversing agricultural as well as those draining manufacturing or urban areas, are necessarily exposed to other pollutions besides sewage, and it appears to us, therefore, that any authority taking water from such rivers for the purpose of water supply must be held to be aware of the risks to which the water is exposed, and that it should be regarded as part of the duty of that authority, systematically and thoroughly, to purify the water before distributing it to their customers.

"Apart from the question of drinking waters, we find no evidence to show that the mere presence of organisms of a noxious character in a river constitutes a danger to public health or destroys the amenities of the river. Generally speaking, therefore, we do not consider that in the present state of knowledge, we should be justified in recommending that it should be the duty of a local authority to treat its sewage so that it should be bacteriologically pure."

The speaker believes that this is as it should be. Sewage purification plants should be built where they are needed to prevent nuisance; where the streams are small and the volume of sewage great their efficiency should be high; where the danger of nuisance is slight, the efficiency of the plant need not be high; where the dilution is sufficient no other process than screening need be used. But septic tanks, sprinkling filters and contact beds should not be depended upon to protect water supplies, functions for which they are naturally not fitted. The influences that bring about the self-purification of streams may be utilized to mitigate the nuisances of sewage pollution, but are not to be depended upon to protect water supplies to be used for drinking.

In this discussion one point has not been mentioned, and that is the responsibility that one community owes to another. Is it right that an up-stream community, by polluting a river, should put a down-stream community to the expense of filtering its water supply? On the other hand, has the down-stream community a right to insist that the up-stream community shall change its sewage into drinking water? These are very important questions, involving various common law rights, which our jurists should lose no time in making clear. That there are conflicting interests no one can deny. There are many equities that will have to be adjusted and these will vary under different conditions, but if the principle is recognized that filtration plants are best adapted to protect water supply and that sewage purification plants are best adapted to prevent general nuisances, it will be found easier to adjust these equities; and if our State Departments of Health and our sanitary laws can be made to conform to this principle there will be a great saving of expense and a more rapid improvement in the public health.

FIRE CISTERNS IN SAN FRANCISCO

The city of San Francisco plans the construction of 90 fire cisterns to be scattered throughout the city, whose purpose is not only to furnish water more rapidly than it might be obtainable through the pipes, but also to provide against the rupturing of the mains by another carthquake. At the end of 1908 contracts had been let for 47 of these and three or four were practically completed. We doubt whether any city has ever before furnished fire cisterns on such a wholesale scale as this.

EXAMINATION OF ROAD TARS

Kinds of Tars Used for This Purpose—Characteristics Desirable
—Tests for Ammonia, Rates of Drying and of
Penetrating Road Surface

Delegates from the United States at the recent International Road Congress report that England has made even further advance than this country in the use of tars and oils for road treatment. As stated a few weeks ago, with the increasing use of asphalts and tars in various ways in connection with road treatment it becomes desirable to be able to determine the adaptability of the various substances submitted for use, and the manner of testing these is becoming therefore of greatest importance to municipal engineers.

An article dealing with this subject prepared by Clayton Beadle and Henry P. Stevens was published in a recent issue of the "Surveyor," of England, and we present an extensive quotation from this with an abstract of those parts which are largely of local application.

The custom of applying tar to the surface of roads for the abatement of the dust nuisance has become so general that an inquiry as to the best sorts of tar for the purpose should lead to results of considerable value. The word "tar" for the purpose we have in view comprises not only a number of grades of coal tars having qualities rendering them more or less suitable for application to road surfaces, but also materials from totally different sources and of different chemical composition. There is in the first place the crude coal tar, which is a by-product in the manufacture of coal gas; enormous quantities of this are produced yearly in this country. In the London district alone about 4,000,000 tons of coal are destructively distilled annually for the purpose of making coal gas, and yield, say, about 40,000,000 gallons of tar. A very large proportion of this is worked up for the manufacture of a variety of chemicals, including carbolic acid, solvent benzene, the coal-tar dyes, and a number of pharmaceutical preparations, in addition to which there are a number of applications for the crude tar, including its use as an antiseptic, for the manufacture of lamp black, for treating timber, and for tarring felt. Its use for tarring roads is quite a recent application, and seeing that the quantity required would be very considerable, even if it became the custom to make use of it for main roads only, it is worth noting that there is a very considerable supply to draw upon.

Crude coal tar is an oily liquor heavier than water, the specific gravity lying as a rule between 1.1 and 1.2. The composition of the tar will depend upon the quality of the coal from which it is prepared, and the temperature at which it is distilled, and therefore crude tars from different districts may be expected to differ in composition and consequently in suitability for application to roads.

There also passes over with the tar in the process of distillation a quantity of finely divided carbon. This carbon collects with the tar, so that it is always found in the latter. The proportion of this constituent is of some importance in respect to the suitability of the tar for our purpose, as will be seen later. Similar tars are

also obtained from blast furnaces, coke ovens, etc. In addition to the crude tars we have freed, refined or prepared tars, which are obtained from the crude tars by a preliminary distillation treatment. The price of these latter is not necessarily greater than the crude tar, as certain of the constituents removed in this preliminary treatment have a higher commercial value than the remainder.

Coal tar collects in the gas works in a long, shallow. semi-circular trough, termed the hydraulic main, and with it there condenses a considerable amount of watery liquor containing ammonia and other substances. The crude tar is always contaminated with some of this liquor, which is separated as completely as possible before subjecting the tar to distillation. It is obvious that this distillation process will free the tar from the finelydivided carbon, which will remain behind in the still, the higher boiling constituents of the tar will also be found in the residue in the still, so that the refined tar prepared by this distillation process consists of certain ingredients only of the original crude tar. It is more fluid, its density is lower, and it is free from insoluble matter, points which render it altogether more suited for tarring roads than the original crude substance.

In addition to coal tars there are oil gas tars which are obtained from certain petroleum residues; and finally, special compositions of unknown origin, but usually one of the above, which have been placed on the market for the purpose of road tarring.

In selecting a suitable tar, choice should be made of one (a) which is capable of rapidly penetrating the road surface (b) which binds firmly together the top layer of road surface down to a depth of, say, 3 inches or 4 inches, and (c) which dries quickly so that the road can be used for traffic soon, if not immediately, after the application of the tar without "picking up" and sticking to the wheels of vehicles passing over it.

OUTLINE OF EXPERIMENTAL WORK

In making a study of a number of different tars on the market, the foregoing points have been borne in mind, and our experiments have been conducted on the following lines with a view of determining the relative advantages of the different grades as found on the market.

(1) The tars were examined to see if they contained any considerable percentage of ammoniacal liquor. This latter is formed at the same time as the tar and collects in the hydraulic main of the gas works, and consequently all crude tars will contain a certain proportion of this liquor. There is no reason to suppose that the ammoniacal liquor should have a very detrimental effect on tar when used for road laying, but a strong and disagreeable odor would be given off when the tar is heated, and even at ordinary temperatures the tar, when spread on a surface, gives off ammoniacal compounds, and possesses a strong, although not necessarily disagreeable, smell.

(2) The rate at which a thin layer of tar dries when exposed to the air was determined. Experiments were made at ordinary temperatures (50 degrees to 60 degrees Fahr.), and what may be described as summer temperatures, say 80 degrees to 90 degrees Fahr. The surface of

the road in summer sunlight would probably often exceed this latter figure. The loss of weight due to volatile constituents was also determined, and the condition and consistency of the dried surface noted.

(3) The rate of drying of the tar when mixed with sand was determined. Equal quantities of fine silversand were weighed out into metal trays and equal quantities of the tars were poured onto the sand, the rate at which the tar penetrated the sand was noted, and also the rate at which the mass of sand and tar dried and the consistency of the dried residue.

(4) The rate at which the hot tars might be expected to penetrate the road surface. This of course might be got at by determining the viscosity of the tars in one of the usual forms of apparatus designed for this purpose, such as a vessel of a certain capacity provided at the bottom with an orifice of standard dimensions, the time taken for the material to flow out through the orifice being a measure of the viscosity. Crude coal tar, however, would be very likely to block the small orifice owing to the finely divided carbon in suspension, and we consider the following method we have adopted more practical as more closely resembling the conditions in which the tar is to be used. We determined the capacity of the tar for penetrating the road surface by pouring an equal quantity of each tar onto a porous earthenware slab. The time taken for the "wetness" to disappear from the surface was noted, and any portion of the tar which remained unabsorbed on the surface was scraped off and weighed, so that an estimate could be made relatively as to what proportion would remain on the surface of the road, and what proportion would penetrate beneath the surface.

The writers, continuing, describe the results obtained in sampling crude gas tars; blast furnace tar; freed, refined or prepared tars; oil gas tar, and a special tar composition sold for dust laying. The first class contained a considerable quantity of ammoniacal gas liquor and two of the four samples of the third class gave off a small amount of alkaline vapor on heating.

When dried down into a thin layer at a temperature of 80 to 90 degrees Fahr., samples of the first class of tars showed a loss of weight varying from 17.6 to 27 per cent., a sample of blast furnace tar showed a loss of 7.8 per cent., samples of prepared tars showed losses varying from 14.4 to 26.1 per cent., a sample of oil gas tar showed a loss of 26.2 per cent. and the special composition a loss of 24.9 per cent.

In general, the prepared tars were not as sticky nor as fluid as the crude tars. The oil gas tar remained very fluid and showed little signs of drying.

The various samples were poured upon sand, and twenty-four hours later it was found that the absorption of the crude gas tars had in general been slow, that of the blast furnace tar very slow indeed. On the other hand the prepared tars were absorbed rapidly and the mass became fairly stiff. The oil gas tar was absorbed immediately but the mass remained soft. The special composition was absorbed with fair rapidity and the mass became moderately stiff.

Samples of each of the tars were poured upon porous

porcelain slabs and the percentage of tar remaining on the porous surface after practically complete absorption was from 8 to 53 per cent. in the case of crude tars and from 21 to 33 per cent. in the case of prepared tars; except one sample, of which nothing remained on the surface; the difference between these percentages and 100 being the percentage which penetrated into the porous tile.

The writers state that it does not follow that a tar which completely penetrates the road is the best for the purpose, since a certain amount of surface coating is desirable, and in fact indispensable if sand is to be spread upon the surface after the tar is applied. On the other hand, a proper amount of penetration is of equal importance if the tar is to be a binding material as well as a dust layer. In securing penetration into the road surface in actual practice it must be remembered that this will be considerably retarded by the presence of moisture in the surface material.

SMALL CUBES FOR ROAD PAVING

Improving Macadam Roads with Two-Inch Cubes of Stone or Artificial Material—Novel Appliance for Testing Road Material for Wheel Wear

THE improvement of county and State roads by the use of small cubes, a method heretofore untried in this country, we believe, was advocated December 11 before the Rochester Engineering Society, by J. Y. McClintock, Engineer of Monroe county. The wear on a road composed of small stones is, he thinks, somewhat proportional to the variation in size and shape of the stones employed, and consequently if these be all one size and of a shape to fit closely together, amount and unevenness of wear will be diminished, and consequently dust and mud.

He proposes placing on the present macadam, as a foundation, cubes measuring two inches on a face; thus raising the grade by two inches only. These cubes can be handled with shovels, and if spread out will rest squarely on a face, and consequently do not need to be placed by hand but may be assembled compactly by hoes or rakes. No sand cushion is proposed. Owing to their small size no care to have them break joints is necessary.

As materials for these cubes Mr. McClintock suggests Medina sandstone sawed across the natural beds and split into cubes; limestone sawed into cubes; trap rock broken into pieces which can be placed into a two-inch cubical mould, the remaining space being filled with pitch, asphalt or Portland cement; asphaltic concrete, similar to ordinary asphalt block material, or other material made by substituting pitch or tar for the asphalt, and Portland cement concrete made with sand and either broken stone or gravel.

He estimates that the cost of such resurfacing, 16 feet wide, would vary from \$2,000 to \$5,000 a mile, and believes the cost of maintenance would be very much less than that of macadam, while the road would

remain continuously in proper shape for use and enjoyment.

Last summer he obtained from the Standard Sewer Pipe Company 7,000 cubes made of vitrified clay such as is used for sewer pipe, which he considered not so desirable as the shale used for paving brick. Three strips of these were laid in well-traveled roads. They have now been down several months and are said to look well. (The 7,000 cubes would make about 13 linear feet of road 16 feet wide.)

In order to test the substances above suggested a novel appliance was used. Through the courtesy of the William P. Davis Machine Company a metal planer in their shop was used, by setting a 38-inch wheel with a 2-inch tire in a frame so that it could be loaded with any weight desired; which frame was fastened to the cross yoke of the planer so that cubes fastened on the planer bed could be passed back and forth under the wheel, the feeding gear moving the wheel sideways back and forth so as to distribute the wear regularly over the small sample of pavement. Twenty-five cubes placed in a box 10 inches square were used as a sample area for testing. The wheel, loaded with 1,100 pounds, was rolled 10,144 times over the vitrified brick, asphalt concrete and pitch concrete samples, and 3,536 times over Portland cement cubes only ten days old. The amount of wear was not stated, but Mr. McClintock concluded that "the tests show that all of the varieties of cubes will make a good surface and be able to sustain heavy traffic; and that fine sand is suitable for filling the joints between the cubes."

In order to learn what wear roads in Monroe County would be subjected to, a calculation was based on a road census of thirteen roads near Buffalo and Rochester, obtained by W. G. Harger in 1904. This indicated that from 1,000 to 2,700 wheels per day would pass over the several roads, carrying average loads of from 317 to 720 pounds per wheel; and that a square 10 inches each way in the middle 8-foot width of the road would have roll over it from 70 to 191 wheels, and receive from 12 to 34 horse foot-falls a day.

WATER WASTE FROM LEAKY FIXTURES

THE City of Houston, Texas, endeavors to impress upon its citizens the necessity for having leaks in water fixtures repaired, by printing in the pamphlet of Rules and Regulations of the Water Department an estimate of the amounts of water which would be wasted from orifices of various sizes. These figures are, of course, approximate only. We reproduce the table below.

HOW CITY WATER MAY BE WASTED

SELF INTEREST SHOULD PROMPT YOU TO PREVENT WASTE APPROXIMATE NUMBER OF GALLONS DISCHARGED PER DAY OF 24 HOURS

Pounds Pressure	DIAMETER OF ORIFICE IN FRACTIONS OF AN INCH											
AT ORIFICE	1/32	1/16	1/8	3/4	1/2	3/4	1					
35	250	900	3600	14500	58000	133000	232000					
50	285	1150	4600	18500	74000	160000	296000					
65	315	1250	5000	20000	80000	183000	320000					
85	350	1425	5700	23000	92000	210000	368000					
100	385	1550	6200	25000	100000	225000	400000					

A family of Five People cannot use as much water as will be wasted by one Leaky Faucet.

MUNICIPAL BOND SALES

Concerning Sales of Municipal Bonds During November by Cities of Less than 100,000 Population— Financial Statistics of Cities Listed

Name of City	Esti- mated Popu- lation	ACTUAL VALUE OF ASSESSABLE PROP- ERTY (estimated)		ass,			NET BONDED DEBT		Tax Rate	BOND SALES, NOVEMBER,		908	Basi	
		Total	Capita	Ratio of to act'l	Bonded Debt	Sinking Fund	Total	Per Cap- ita	Per \$1,000 Ass'd Value	Term of Years	Amount	Interest	Price	B
sceola, Arkaywards, Calill Valley, Cal		\$3,000,000 4,000,000	\$750 1,142		\$50,000 93,750	\$5,334	\$50,000 88,416	\$12.00 25.00		20 1-40 ser. 1-40 ser.	\$25,000 6 40,000 . 50,000 5		92.00 104.013 104.782	6.
anta Paula, Cal	1,000	6,000,000	6,000		100,000		100,000		10.00	1-40 ser.	50,000 5 7,000 5 100,000 5	0/2	100.728 101.375	4.
eriden, Connthens, Gablumbus, Ga	20,000	5,000,000 17,929,340	250 717		350,000		350,000 504,500			17½ avg. 30 30	350,000 4 75,000 4 250,000 4	% s.a. 2% s.a.	Par Par 103.50	4.
ecatur, Ga	5,000	700,000		50%		1,500	53,500	10.70		30 10-20 opt. 10-20 opt.	30,000 5 5,000 5 30,000 5	% s.a.	103.00 100.36 Par	4.
eiser, Ida	65,000	50,000,000				40,000				10-20 opt. 1-10 ser. 10	28,800 5 16,892 6 344,000 4		100.50 Par 100.043	5
oux City, Ia linwood, Kan xington, Ky	45,000	30,000,000	666							10-20 opt.	40,000 5 55,000 4	70	Par 101.784	1.
exandria, La	16,000			123	160,000	1,309,885	160,000	10.00	15.00	20-40 opt. 4 mos.	1.950.000 4	%	Par 100.3937	
estertown, Md	3,100 40,818	1,165,664 26,964,866	376 661	75 100	30,000 1,757,000	535,644	30,000	9.00	4.00	94	58 000 4	07. sa	104.53 103.55	3
wrence, Mass	76,616	54,246,294	708		2,088,300	135,693	1,952,607	25.00	16.40	1-10 ser.	125,000 3 71,000 4 100,000 4	.31% % s.a.	101.73	3
tsfield, Mass	30,000	21,799,250		100			1,188,000			5-24 ser. 10-20 opt.	0,000 3	/0	104,819	3 4
eksburg, Misslena, Mont	22,000 17,000	20,000,000 11,630,000	909 684	50 331	584,300 488,800		584,300 488,800			19½ avg. 20	225,000 4 600,000 5 25,000 3	2% a.	100.57	
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antic City, N. J uinfield, N. J	19,100	21,500,000	1,125		300,000		300,000	15.70	13.50	313 avg. 104 avg.	160,000 4 31,000 4 15,000 4	2 % s.a. 2 % s.a.	105.36 103.296 103.296	
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nkers, N. Y		60,019,750	883			299,600			24.48	1-40 ser. 1-20 ser.	175,000 4 80,000 4	5.a. 5.a.	101.71 106.62 104.01	4 4 4
ynesville, N. C gely, N. D	800	1,000,000	1,250	20						30 20	100.000 5 52,000 4 175,000 4 80,000 4 25,000 5 7,000 6 10,000 4 9,000 4 5,000 4 7,000 6	70 S.H.	Par 101.014 100.9275	
ron, Ohio				75			1,280,995			12½ avg. 5½ avg. 4½	9,000 4	% s.a. 2% s.a.	100.9273 102.17 102.26	3
na, Ohio	600	450,000	75	50	1,500		1,500	2.50	.60	2 5-34 ser.	3.000 5	% s.a.	103.00	4
lett, Unio									1	7 avg.	2,017 5	% s.a.	104.312 103.628	4
aware, Ohio	11,000	7,000,000	636	56	214,584	14,365	200,219	18.20	31.70	24 avg. 54 avg.	6,000 5 67,745 6 1,750 4	07 22	102.091 108.438	4
storia, Ohio		*********								2 avg. 1-12 ser.	12,000 4	% a.	100.571 101.14	3
aware, Ohio ria, Ohio toria, Ohio toria, Ohio tosater, Ohio umee, Ohio umisburg, Ohio terva, Ohio walk, Ohio dev, Ohio	5,000	4,000,000	800 500	43	165,880	7,500	158,380	31.00	30.00	5 avg. 1-10 ser. 4-20 ser.	11,000 5 22,080 4 3,500 5	% s.a.	103.75 Par 104.757	4
walk, Ohio										6‡ avg. 1-10 ser.	6,000 5 890 5 1,100 5 1,338 5	% s.a.	104.791 100.224	4
kley, Ohio asant Ridge, Ohio									}	30 3 avg.	1,100 5 1,338 5	% a. % a.	110.227 Par	4
st Unity, Ohio	1,000	500,000	500	39	1,800	51	1,749	1.74	1.45	9 avg. 2 3‡ avg.	1,338 5 1,800 4 5,000 5 800 5 4,135 5 7,300 5 10,425 5 2,500 5 56,000 4	% s.a. % s.a.	102.833 101.427 101.70	444
										6 avg. 5 avg.	4,135 5 7,300 5	% s.a. % s.a.	102.834	
										4 avg. 24 avg.	10,425 5 2,500 5	% s.a. % s.a.	103.21 101.50	44
oungstown, Ohio	60,483	56,882,000	940	50	1,269,112	209,167	1,059,945	17.22	29.42	175-6 avg.	56,000 4 1,000 5 33,650 5	% s.a. % s.a.	101.25	3
										4 avg.	4,115 5	% s.a.	103.28 103.08 102.95	4 4 4
on, Okla	1,200	592,046	493	100	29,000		29,000	24.00	10.00	4 avg. 4 avg.	4,115 5 3,580 5 11,510 5 29,000 6	% s.a.	102.72	4
skogee, Oklaahoma City, Okla.	26,000 40,046	16,813,000 31,250,000	646 781	80 20	530,000 793,000	90,000	440,000 793,000	16.00 18.00	30.00	25 25 25	550.0001		103.181 105.95	5
	40,040	31,230,000	701	20	793,000		793,000	18.00	3.34	25 10–20 opt.	25,000 5 300,000 4 5,000 6	% s.a.	100.266 Par	4
Johns, Ore										10 10 9–29 opt.	5,000 6 2,000 6 5,000 4	% s.a.	Par 100.85	3
tral Falls R I	8,000	3,000,000	375	66	65,000	5,000	60,000	7.00	13.00	1-10 ser. 20-39 ser.	2,000 6 5,000 4 10,000 5 200,000 4 50,000 4 125,000 6 80,000 6	% s.a.	101.762 Par	4
nston, R. I										20	50,000 4 125,000 5	70	100.625 102.22	4
len, Utahic City, Va		15,000,000	500	60	550,000	80,000	470,000	15.00	10.00	20 10-30 opt.	450,000 41 25,000 6	% s.a.	Par 100.25	5
th Yakima, Wash.	15,000	5,309,000	353		108,000		108,000	7.00	36.25	20	80,000 41 20,000 5 90,000 5	% s.a.		4.

DISCUSSIONS, QUESTIONS AND ANSWERS

Readers of the Municipal Journal and Engineer are invited to send for publication in this department inquiries concerning such matters as can probably be answered from the personal experiences of others, or from information on file in this office. Any who can furnish the desired information are requested to do so, in addition to any reply which may be given by us.

It is especially desired that an exchange of opinions and discussions on mooted subjects find place here. We will welcome any opinions, whether or not we agree with them; requesting, however, the omission of all personalities.

DUCTILITY TEST OF ASPHALT

Editor, MUNICIPAL JOURNAL AND ENGINEER,

231-41 West 39th Street, New York City, N. Y.

DEAR SIR:-What is meant by the blanks in Mr. Tipper's table of "Ductility of Various Asphalts" on page 821, issue of December 9? Is the measure of ductility actually the distance between the ends of the clips at the time the test specimen breaks or is it such distance less the length of the "distance piece" in the side of the mould? The end clips start this far Your truly, apart when the test is begun. C. W. C.

We referred this to Mr. Tipper, and he replied as follows .

Editor, MUNICIPAL JOURNAL AND ENGINEER,

231 West 30th Street, New York City.

DEAR SIR:-In answer to your statement as to inquiry made by a subscriber of your paper, with reference to the method of measuring ductility elongation, would state that this measure is taken, as a rule, as being the distance between the inside of the clips at the time of the breaking of the specimen. As a basis between one asphalt and another, this method is perfectly satisfactory; but for an accurate determination of the elongation of any particular material in testing for ductility, it is advisable to take the measurement between the clips at the point of breaking of the specimen, less the measurement of the distance piece used in moulding. Very truly yours,

H. TIPPER.

SLIP OF PUMPS

Editor, MUNICIPAL JOURNAL AND ENGINEER. 241 West 39th St., New York, U. S. A.

Montreal, December 19, 1908.

DEAR SIR: The article in the December 16 issue, on "Slip of Pumps," or what is called pump slippage, is worth the whole year's cost of your journal. It is a matter that very few of the engineers of water works look after. I have been called on cases where new pumps have been called for, when the real cause has been pump slippage. I had a case only a short time ago when, by actual measurement, over 300 gallons of water a minute passed and repassed between piston and cylinder. The verdict was "pump getting too small." I will give you an instance, close to Montreal, where a small water works plant was installed. On taking off the covers of the water cylinders, water shot out 12 feet while the piston was running toward the steam end. This was of the plunger and ring pattern. One can hardly realize the loss on the coal heap by slippage without going into it in a thorough manner. At the meeting of the American Water Works' Association in Boston, in 1906, the subject was brought up. More such subjects brought up and published in your valuable journal in connection with water works in general will no doubt be appreciated by water works' engineers and boards of water commissioners.

> Yours truly, WILLIAM PERRY. Consulting and Hydraulic Engineer.

FINANCIAL RESPONSIBILITY OF CITY **OFFICIALS**

Editor, MUNICIPAL JOURNAL AND ENGINEER.

230 West 30th Street, New York City.

Dear Sir:-I would like to see the following question answered in the columns of THE MUNICIPAL JOURNAL AND Engineer: Is it policy for a municipality to elect men to office, wherein they have the management of the city's financial affairs, these men not only having no financial ability, but being execution proof?

To make the question clear, I will illustrate with the following example: With one exception, our Board of 10 Aldermen, together with the Mayor, cannot, combined, show an aggregate of \$5,000. The exception mentioned is a man of large affairs. Yours respectfully,

DURABILITY OF CEMENT IN SEWERS

St. Joseph, Mo., Dec. 31, 1908.

Editor MUNICIPAL JOURNAL AND ENGINEER,

231-41 West 39th St., New York City.

DEAR SIR: Referring to your very interesting article in the December 23d issue, "Cement and Alkali Soils" and your editorial "Use of Cement in Sewers," it does not seem to me that there is that broad and general connection between the two subjects as might seem to be indicated by your editorial.

Cement, native brands, Milwaukee, Utica, Louisville, Ft. Scott, and perhaps others, have been used in some of the largest brick sewers in the country in this city since 1885, and I have designed and supervised the use of the same in such sewers since 1891. These large brick sewers built in 1885, 1888, 1890, 1891 and 1892, and following years, are all in first-class condition, considering everything. The effects of alkali, of course, are confined to such localities as are specified in your article. Montana and the alkali country, but in 75 per cent. of this country this question, while interesting, would have no application directly, it would seem to me.

The danger of the action of acids in small sewers, of the separate system especially, I believe to be quite important, and I certainly would specify vitrified clay pipe for anything under 18-inch, and, under certain special conditions, for even larger sizes. For larger sizes, especially in the combined system, I see where it is proper to use cement pipe, if prices warrant and the workmanship is very good. My preference from experience, however, is for vitrified clay up to as large size as is economical, considering first cost, maintenance and durability. I have built brick sewers, of one ring of brick, as large as 42 inches in diameter, and they are as sound to-day as when put in twenty years ago. Carefully built of first-class brick, with a heavy coat of cement mortar over the whole outside, they are the equal in durability of anything. From 27-inch to 36-inch, it is with me a question only of price for equal capacity whether I use one ring brick, concrete or vitrified clay pipe, the foundation being good. Above 36-inch to 42-inch, with a good foundation, I let price decide between one ring brick and concrete; in very good earth, I have built 4-foot sewers of one ring brick that are as good as when put in twenty years ago, except for slight repointing, and they were constructed of native cement. In like earth, I have also built 8-foot sewers of two rings of brick, and they are practically perfect to-day, except for slight repointing. No trouble has ever been experienced with the cement in these joints from acid or like action; in fact, the work is as good as when put in, except the reasonable wear and tear; in some cases storm water carrying debris, small rock, etc., passing through them.

In late years, quite an extent of large concrete sewers has been constructed in this city, but time enough has not elapsed to develop any deterioration from any other cause than faulty construction. The sewage is so diluted that I do not look for any damage by acids. At the present state of my knowledge and experience, I cannot conceive of any possible deterioration in concrete sewers more than 18 inches in diameter, properly constructed, other than such as is peculiar to the alkali bearing country alone, and then only under the conditions named in your article or very similar ones. Yet I am in favor of lining inverts with one ring of brick in the larger sewers.

Of course, within the last five years or so, the use of Portland cement has almost entirely displaced the use of native CHAS. W. CAMPBELL. Yours truly. cements.

NEWS OF THE MUNICIPALITIES

Divers Subjects of General Interest and Their Treatment by City Councils and Officials—Streets, Water Works, Lighting and Sanitary Matters—Police and Fire Items—Government and Finance

ROADS AND PAVEMENTS

Consider Forced Paving Favorably

Baltimore, Md.—Officials of Baltimore have been studying the system of so-called "force" paving used by Detroit with more or less idea of adopting similar methods. In Baltimore the paving is deferred until the assessments are actually collected and covered in the city treasury, which frequently defers the paving for unlimited periods, no matter in what condition the street is, for the reason that often those on whom the assessments are made make an appeal, as they have a right to do under the charter; such appeals being heard in the courts and at times creating long and tedious delay. Under the Detroit method, which is authorized by that city's charter, the Common Council, with the approval of the Mayor, appropriates annually \$300,000 for what is known as forced paving. That is to say, if a street is to be paved on petition of property owners, and should any dissatisfaction exist on the part of those owners who do not sign the petition, a portion of the \$300,000 can be used immediately in paving the street and the assessments collected afterwards by the city government when all appeals, if any, have been settled.

Old Bermudez Company Returns to the Field.

Caracas, Venezuela.—Since the overthrow of the Castro government, F. R. Bartlett, representing the New York and Bermudez Asphalt Company, has arrived here and opened an office. It was this company that the civil courts condemned to pay a fine of \$5,000,000 to the Venezuelan Government because of alleged complicity in the Matos Revolution.

Want Better Sidewalks

Green Bay, Wis.—A sidewalk ordinance has been prepared, which provides that all builders shall take out a license showing them to be competent and shall follow the grade lines and plans as furnished by the Committee on Sidewalks, and shall pay a penalty of not over \$25 for not following the city's directions on jobs. If rules are broken the builder will not be allowed to lay another sidewalk within three months.

To Widen Walks and Remove Obstructions

Jacksonville, Fla.—The appearance of Main Street between Bay Street and Hogan's Creek is to be much improved by increasing the width of cement walks to twelve feet and regulating the position of awning and piazza posts. All these obstructions, now set nearer to the building line than twenty-four inches from the outer curb line will be moved so as to be not more than eighteen inches from the outside curb line. During recent years, Main Street has developed as a business and a much traveled thoroughfare.

Dispute Over Basis for Measuring Asphalt Mixture

Washington, D. C.—A dispute has arisen over the methods of measuring asphalt mixture used in repairing pavements under the contract now held by the Brennan Construction Company and considerable sums of money have been held pending an adjustment. The asphalt is, according to the contract, paid for by the cubic foot. This was formerly understood to mean a cubic foot delivered on the street. In 1904 a change in the method of measurement was made and the cubic contents of the sand box used at the plant, when materials are dumped into the mixer, were accepted. Now it is claimed that this gives the loose measure of material on the wagon and that the city should have received the measure of the denser material as it is received on the street. The Brennan Company has been notified that deductions will be made on 600 vouchers.

City to Do Much Work by Contract

Davenport, Ia.—The indications are that the city will make a radical departure in the method of doing much of its street work next year, and instead of the city doing its own work it is very probable that much of it will be let out to private contractors, as recommended by Mayor Scott. It is claimed by the city officials that the work can be completed much cheaper in this way than if the city hires the men and performs the labor. The Mayor advocates that all the large jobs be let out and the city do only the small ones. In this way the city force will be much reduced and the responsibility will also be placed on the shoulders of the contractors.

Want City to Pay One-third of Cost

Pasadena, Cal.—A movement is on foot to have the Legislature pass a law amending the city charter so as to make it incumbent on the city to pay one-third of the cost of street improvements. At present the city pays only for intersections. Property owners on Main street, which is 56 feet wide, are opposing the assessment in that street, presumably with the object of having the paving postponed until the law is changed.

Discuss Crown of Highways

Rochester, N. Y .- Senator William W. Armstrong has criticised the construction of the Charlotte boulevard, recently completed, on the ground that the crown is too high—six inches in a 16-foot macadam roadway—and has written to the Highway Commissions of Pennsylvania, Connecticut and Massachusetts for their rules regarding crowns. The reply from Massachusetts states that ordinarily State highways have a crown of three-quarters of an inch to the foot, where the macadam is built to a width of fifteen feet, but in thickly settled districts, where the width is eighteen feet or more, the roads are so shaped as to present a crown of one-half inch to the foot. Another letter is from James H. MacDonald of Hartford, Conn., State Highway Commissioner, in which he says the established grade in Connecticut is 5/8 of an inch to the foot on all grades under three feet to the hundred. He states that the reason he has used this is for the purpose of distributing travel over the entire area of the road to the shoulders. Mr. MacDonald suggests that in a 34-inch grade the travel will be confined to the center of the road and the result is expensive. He says the expense of maintenance on roads where the camber is more than 5% of an inch to the foot will be great, and that the wear in the center will be such that it will be a menace to life. Senator Armstrong also has a letter from R. D. Beman, Deputy Highway Commissioner of Pennsylvania, where the last appropriation for improvement of highways was \$6,000,000. Mr. Beman resides in Harrisburg. He says that in Pennsylvania the camber, or slope of the roads, is 1/4 to 1/2 inch to the foot, and that they rarely if ever give the roads a camber of 3/4 of an inch, as it has been found that a road with the latter slope will rut much more quickly than those with the lesser grade, since traffic is practically forced to the center.

Town Does Much Work

Stamford, Tex.—One hundred thousand dollars has been spent within the past four months in improving the sidewalks, sewerage and water works of the city. Of this amount, \$40,000 has been spent in building concrete sidewalks and curbing; \$30,000 in paving with vitrified brick; \$5,000 in rock street crossings and graveling streets; \$5,000 in grading streets; \$10,000 in completing the sewerage system; \$10,000 in addition to the water works system.

SEWERAGE AND SANITATION

Making Plans for Sewer System

Erie, Pa.—City Engineer B. E. Briggs has had men employed for weeks measuring the volume of the city's sewage and finds that it amounts to about 10,000,000 gallons a day, a large amount for a city of 75,000 population. Details of the plan have not yet been prepared for submission to the State authorities, but it is probable that there will be two intercepting sewers along Mill Creek, and another along the lake front, all leading to a disposal plant. The City Engineer is endeavoring to so plan the work as to obviate the necessity of building a sewage pumping plant.

State Aid for River Purification

Harrisburg, Pa.—A sewerage bill prepared for submission to the Legislature by attorneys of third class cities of Pennsylvania, if it becomes a law, will provide that whenever the State Health Department shall force a municipality to erect a plant for disposing of its sewage, house and otherwise, that the State shall bear half the expense. The plea is made that the erection of such plants would pauperize most towns, because of their great expense, and the further plea is made that the people of the State generally are sufficiently interested in preventing pollution of streams by sewage to warrant them in helping pay for such expense—as they are now paying a share for good roads.

Hotel and Restaurant Kitchens Inspected

Indianapolis, Ind.—An inspection of about sixty hotels and restaurants has been completed by the city Board of Health under the scoring plan recently adopted, under which each place is scored according to cleanliness, methods and equipment. Of the sixty places inspected, only two fell below the grade of 60 per cent. These places will be required to make changes that will bring their score up to the standard, or their licenses will be revoked. As a result of the inspection two of the downtown hotels and several of the restaurants are making extensive changes.

United States Against Passaic Sewer Plans

Newark, N. J.—The Federal Government has made a motion in the United States Supreme Court, for the right to become a party complainant in the action brought by the State of New York to restrain the Passaic Valley Sewerage Commission of New Jersey from emptying sewage in the New Jersey waters into New York Bay.

Important Sewerage Improvement Finished

Ottawa, III.—West Ottawa's big \$200,000 improvement, which has been in the course of construction during the past two years is now completed and has been formally accepted by the Board of Local Improvements. The total expense involved is \$203,989.75. The contract price with Green & Sons of this city was \$190,874.10. The actual cost of the construction, however, is \$197,733.89, which with court cost, costs of spreading special assessments, publication fees, advertising, engineering and inspection fees, examination of titles of property and estimated cost of causing a supplemental assessment to be levied, brings the total cost up to \$203,989.75, or \$13,115.65 more than contract price.

San Francisco Health Officer Lectures to Sanitarians

Seattle, Wash.—Dr. R. G. Broderick, Health Officer of San Francisco, in a lecture in the City Council Chamber, to an audience of medical men and members of the local sanitation department, discussed the question of stamping out bubonic plague. He said that although San Francisco has not had a case of plague in a human being since January 31 last, it is still keeping up rat extermination and spending \$25,000 a month in doing it. At first it was thought the work would be continued four years more, but it has been decided to continue it indefinitely. The city of San Francisco has spent half a million dollars in the rat extermination campaign while the citizens have spent an additional \$2,000,000 in making their property rat proof.

WATER SUPPLY

Private Company Supplements Municipal Supplies

Connellsville, Pa.—What the private water lines meant during the drouth to many towns and localities in the Connellsville region is strikingly illustrated by the figures of the water purchased by the borough of Uniontown from the Trotter Water Company since August 13 of the past year. Up to December 1 the total amount was 128,995,000 gallons. The Trotter Company also furnished water to Mt. Pleasant, Dunbar, Fairchance, New Salem and other points. Most of them are still dependent on this supply. The Trotter Company has a total of 150 miles of pipe line, extending from the Yough River to within about one mile of Smithfield, with numerous branches and spurs.

Will Sue Water Company

Hazleton, Pa.—Mayor Smith has signed a resolution recently adopted in both branches of Councils wherein the Solicitor is directed to bring suit against the Hazleton Water Company for their failure to furnish an adequate supply of water to residents of the Third and Fourth wards.

Flow-Lines Need Cleaning

Kansas City, Mo.—The city is getting only about 75 or 80 per cent of the use of the old 36-inch flow-line from Quindaro, because of incrustation and the deposit of foreign matter. Wynkoop Kiersted, consulting engineer, said when he made a test in 1897 it was 80 per cent. William G. Goodwin, Chief Engineer, said he was sure that only two-thirds of the old flow-line capacity is in use. Others of the main supply lines are said to be in the same condition. The City's Engineers are to investigate the actual condition of the lines and report the cost of cleaning them. It is asserted that the saving of fuel in one year will more than pay the cost of cleaning out the lines.

Will Make Free Analyses of Water

Lexington, Ky.—Officers of the State Agricultural Experiment Station have announced that they will make free bacteriological analyses of water for any citizen of Kentucky, under certain conditions which are prescribed.

Would Purchase Water Company

Long Island City, N. Y.—The Board of Estimate has received a report from I. M. De Verona recommending the acquisition of the plant of the Citizens' Water Supply Company. Long Island City uses 10,000,000 gallons of water a day. Of this the Citizens' Company supplies 6,000,000 gallons at the rate of \$65 a million gallons. The city pays the company \$200,000 a year, and in addition it collects from 9,000 private customers. The company is eager to furnish still more water to Long Island City if the city will spend \$300,000 on a new main to one of its stations. There are four private water companies in Queens, of which the Citizens' is the largest. It is said that the development of the city is retarded on account of inability to furnish water to manufacturers.

Suggests New System of Filtration

Marquette, Mich.—A committee has been appointed by the Water Board to investigate the practicability of getting clear water from the lake by means of a system of natural filtration. The suggestion is to find a deep bed of sand in the lake and sink a caisson into it. Water would filter through the sand into the caisson, which would have some sort of a screen over its bottom to keep the sand out. The object of the investigation is to see whether a sufficient depth of sand can be found above the rock bottom.

Attempt to Drive Well Abandoned

Mishawaka, Ind.—Learning that a manufacturing company had sunk a well and found a good supply of water the city sank a well nearby in hopes of getting an addition to its supply. Not finding water at a depth of 108 feet the drilling has been abandoned. It is believed that the company's supply came in directly from the river.

New Hydrant Valves Won't Fit Hose Couplings

New Orleans, La.-Confusion has resulted from the fact that the new hydrants of the Sewerage and Water Board are of a different thread than those of the hose connections of the Fire Department. Sol Bloodworth, Secretary of Fire Prevention Bureaus and local members of the National Fire Prevention Association are engaging in a lively controversy with the city authorities in consequence. A similar condition prevails in the new water works plant. A sub-contractor secured the contract for furnishing hose for the plant of the Sewerage Board at Carrollton, and although Fire Department threads had been specified these later were rejected because they would not fit the Sewer Board connections. In the case of the City Hall annex, a sub-contractor purchased hose valves for the stand-pipe system and specified the Sewerage and Water Board threads. The Chief of the Fire Department refused to approve these because they would not fit the Fire Department connections.

Experimental Purification Plant at Niagara Falls

Niagara Falls, N. Y .- At a meeting of the Water Commission the Mayor submitted a communication from the Municipal Filtration Company, of New York City, received in answer to a communication notifying the company that the Board of Water Commissioners had adopted a resolution that the Municipal Construction Company, of New York City, be permitted to construct an experimental filtration unit of the Roach system for the purpose of demonstrating what such system can do with the Niagara River water, provided that the establishing of such experimental unit is done without expense or obligation upon the city or prejudicial to any action which the city may hereafter take in regard to furnishing pure water to the city. The communication stated that the company would proceed to erect the demonstration plant named in the letter, that the plans for this plant would be immediately prepared and a representative from the company would take them to Niagara Falls and prepare for immediate action. The opinion was expressed that there can only be one outcome for this demonstration and that it will be-the taxpayers of the city will call for this class of filtration. The Commissioners asked the company to submit definite proposals.

Omaha Water Fight in Courts

Omaha, Neb.-Alleging that the schedule of rates which the Omaha Water Board is endeavoring to put into effect is so low that the company would lose money under them, the Omaha Water Company has secured from Judge Munger in United States Circuit Court a restraining order forbidding the members of the Omaha Water Board from giving any advice to the people of Omaha regarding the rates they should pay for water. This suit is the latest step in an acute controversy between the water company and the Water Board over the question of rates. The schedule which the Water Board is endeavoring to enforce was adopted about two months ago, and was ordered to go into effect on January 1, 1909. Flat rates are payable in advance in semi-annual installments, and the Water Board had advertised that one of its members would be at the Board's office, and another member would be at the office of the water company, to advise consumers as to the rates they should pay. The officials of the water company announced that they would not permit any member of the Water Board in the water company's office, and they have since secured a restraining order.

Louisville Filtration Works Approach Completion

Louisville, Ky.—Work on the water filtration system is progressing so favorably that the officials of the Water Company have announced that filtered water will be flowing through the mains by the middle of next March.

STREET LIGHTING AND ELECTRIC POWER

Low Water Cripples Power Plants

Albany, N. Y.—Electric roads in this part of the State, depending largely on water power, are in hard straits, as the power companies cannot furnish much electricity because of the scarcity of water due to the unusual dry weather for some months. All of the roads are using auxiliary steam plants. Usually the trolley cars are heated by electricity, but none can be spared for that purpose and the passengers shiver.

Will Not Operate Plant Acquired by Annexation

Atlanta, Ga.—In annexing Edgewood the city acquires a small municipal lighting plant that has been in operation about a year. On account of an agreement made with the Georgia Railway and Electric Company by which the latter pays the city 2 per cent of its gross receipts so long as the city does not operate a lighting plant, the plant will be disposed of as soon as convenient. In the meantime it will be operated by the lighting company, charges for services being made at the rates prevailing in Atlanta.

Rodents Destroy Insulation and Create Fires

Detroit, Mich.—Ralph Collamore, an electrical engineer, of this city, states that rats are largely responsible for fires usually attributed to defective wiring. He states that the codents frequently gnaw through conduits and are electrocuted. The fat from their bodies will ignite adjacent grease and dust and thus start fires. "Very often," says Mr. Collamore, "janitors and engineers of big buildings in which the wiring is encased in iron conduits find at the bottom of shafts, rats which have become entangled in the wires and killed by electricity. Wherever the wiring is of the open variety there is always danger of fire from rats. The time will come when all wiring will be done through metal conduits and regulations to that end are already becoming more stringent."

Humboldt Again Has Street Lights

Humboldt, Tenn.—After being in total darkness for almost three months, the street lights of Humboldt have been turned on. The delay in service was caused by the installation and adjusting of new machinery.

Orders Equalization of all Electric Rates

New York, N. Y .- An order of the Public Service Commission, effective January 1, forbids all electric light and power companies from making any preferential or discriminating rates for light, heat or power service and directing them to file with the Commission and post in their offices 30 days prior to the day they take effect every schedule of changes. The Board has adopted this order on the recommendation of Commissioner Milo R. Maltbie, who has been conducting hearings on the subject for nearly a year. He has had before him the representatives of all the companies doing business in Greater New York as the result of complaints of consumers against certain concerns. Early in the investigation he found that some complaints were well founded, and when the matter was brought to the attention of the companies they agreed to abolish the objectionable practices without a formal order. Notable among these concessions was the restoration of "breakdown" service—the supplying of current to individual plants when they became overloaded or put out of commissionand the elimination of one year and minimum guarantee clauses in contracts. The order abolishing preferential rates says that no electrical corporation shall receive from any person or corporation or shall collect by any special rate, rebate, drawback, or other device a greater or less compensation than it collects from any other person or corporation for like service, nor shall it vary its rates from the schedules filed with the Commission. The city and state of New York are made exceptions to this rule.

New Company Offers Liberal Terms

If oboken, N. J.—In a petition presented to the Common Council asking for a franchise, the Mutual Benefit Electric Light and Power Company offers the following inducements: Eight cents per kilowatt hour for current; a payment of three per cent of its gross annual earnings to the city; underground conduits for all wires, the conduits to be laid two feet below the surface and not less than three feet distant from any gas or water pipe, except where absolutely necessary. The United Electric Company of New Jersey has a contract for lighting the streets at \$100 per are light per annum. This contract expires in June next.

Year's Operation of Municipal Plant

Riverside, Cal.—That the city of Riverside received a net revenue of \$34,739.10 in operation of the municipal electric lighting plant for the year is one of the statements in the report of City Auditor Stibbens. The revenue from the plant for the year was \$93,326.90, and the total cost of operation was \$58,587.80. A total of 2,383 customers patronized the electric light department. There was a total of 40,780 incandescent lights and 86 arc lights in use. Of the total revenue, \$68,606.10 was received from lighting and \$24,983.72 from power.

Lighting Investigators Prepare for Business

Syracuse, N. Y.—The Lighting Investigating Committee appointed by the Common Council to probe the service and charges of the Syracuse Lighting Company will hold hearings in January. The Committee has decided to employ legal counsel and to have a stenographer take down the testimony.

FIRE AND POLICE

Most Alarms; Smallest Fire Loss

Burlington, Vt.—The loss by fire in Burlington during 1908 is between \$10,000 and \$11,000, which is considered very small. There were 98 alarms, which is more than any previous year in the history of the Department. In 1907, 92 alarms were rung in, which was more than any previous year. The loss by fire for the year 1907 was \$16,596.96; for 1906, \$35,609.65; for 1905, about \$43,000; for 1904, \$24,556.18.

Pensions for Firemen

Holyoke, Mass.—An ordinance has been passed establishing a pension system for sick and disabled firemen. Men permanently disabled in the discharge of their duties are eligible to benefits. The pension amounts to one-half the salary received at the time of retirement.

Paid Fire Department for Salina, Kan.

Salina, Kan.—The City Council took definite action on the paid Fire Department question recently when it was decided to hire two men and to buy one good team and harness which will be used with the present fire fighting equipment and the volunteer firemen. It was thought best to take some definite action as to what would make up the paid Fire Department and then improve on it and change it afterwards as Council sees fit.

Sprinklers and Wide Streets Make City Fairly Safe

Toledo, O.—The conflagration hazard of Toledo is reported by the engineers of the fire prevention committee of the national board as moderate in the congested value district. This is due to automatic sprinklers in many of the large-area buildings, and centers of high combustibility. There also are many small buildings, wide streets, an absence of wire obstructions and there is an efficient, though slightly undermanned fire department. The department is reported as lacking in sufficient apparatus to fight two simultaneous fires. Serious individual or group fires are possible owing to structural weakness and a slightly deficient water supply. It is asserted that a single fire under the circumstances could hardly reach conflagration proportions.

Graded System for Hartford Police

Hartford, Conn.-The establishment of a graded system of pay for the Hartford police officers and men with a marked increase in all the grades has been recommended by the special committee on police salaries, which consists of the Board of Police Commissioners, the Common Council Joint Committee on Ordinances and the Joint Committee on Police Department. The new scale will cost the city about \$12,000 a year but it is felt by the Commissioners to be greatly needed, as the salary of the police officers has not been raised since 1868 during which time the pay of practically every other city official has been increased and the cost of living has grown infinitely greater. The scale of increase recommended is as follows: Chief, \$2,000 to \$2,500; Captain, \$1,500 to \$2,000; Lieutenant, \$1,200 to \$1,600; Chief Detective Bureau, \$1,100 to \$1,500; Detective Sergeants, \$1,100 to \$1,400; Sergeants, \$1,080 to \$1,200. The pay of the clerk and matron will remain the same, \$250 and \$480 respectively. Under the present ordinance a regular patrolman should receive \$800 a year for the first two years of service; \$900 a year for the next two and \$1,000 a year for each succeeding year of service. Previous to the adoption of this rate, however, the pay was \$1,000 for all and, as a matter of fact, no man has ever entered the service under the new rate of pay as the ordinance provided that the first thirteen supernumeraries appointed after March 29, 1898 or regular policemen appointed from supernumeraries appointed before that date or regular policemen appointed from said thirteen supernumeraries were to be paid at the old rate of \$1,000 a year. The new recommendation provides that regular policemen shall be paid at the rate of \$900 a year for the first year, \$960 a year for the second year and \$1,000 a year for each succeeding year. They shall also have an allowance of \$60 a year for clothing and equipment.

Suggests Boy Police Force

Dallas, Tex.—To preserve order among young men the organization of what he terms a "kid police force" is suggested by Frank S. Conibear. "Under the plan of organization," says Mr. Conibear, "no boy that has been arrested during the preceding twelve months can get on the force. Those on the force would be expected to restrain the erring. My suggestion is that, by the organization of such a force, the boys, especially the bad ones, might be given profitable employment—profitable in that they would not get into mischief, and worse."

Year Book for Police

Memphis, Tenn.—Funds for the Memphis Police Relief Association, to aid in caring for orphans and widows of policemen, will be started off by the publication of a "Year Book" that is to contain a complete history of every man officially connected with the Police Department since Memphis was a city. The book will be handsomely bound and well illustrated. Ed Grace has been given the contract to get up data for the book, and one-third of the revenue taken in from sales and advertisements will go to the Police Relief Association. To make the book as interesting as possible, Chief of Police George T. O'Haver will have his annual report for 1908 printed in full, with other matter pertaining to the police force this year. At least 5,000 of these books will be printed and sent to all the leading police stations of the country.

Safety Brakes for Fire Apparatus

Moline, Ill.—Chief of the Fire Department John Q. Hawk, in a recommendation to John Day, Chairman of the Fire, Water and Light Committee suggests the purchase of a friction brake for the fire wagons, adding that such a contrivance would lessen the danger in fast running, which is now experienced. The Rock Island wagons are equipped with this brake which is the safest known. The saving in rubber tires alone would pay for the brakes in no time, the cost of the appliance being but \$50 per wagon. The arrangement is put on the hub.

GOVERNMENT AND FINANCE

Report of the Maine Tax Commission

Augusta, Me.—The members of the Maine Tax Commission, appointed to investigate the present system of assessing and collecting taxes have submitted their report, recommending that: All assessments be at the full market value, that State assessors be invested with greater powers, that the State tax be apportioned according to land values, that public service corporations be taxed on an advalorem basis. that savings deposits in national banks be taxed, that life insurance companies be taxed according to the value of their reserves, that automobiles be taxed according to the size of the car, that the tax on bank stock be made uniform, that a direct and collateral inheritance tax be levied, that uniformity be brought about in the taxation of steamboats, that a mortgage recording tax be levied, that poll taxes be made uniform in all municipalities, that pleasure boats be taxed wherever found on April 1, that foreign corporations pay a license fee, that a public utilities commission be created, that State, county and municipal bonds be exempted from taxation, and that securities of such Maine corporations as pay a tax based on their full value be exempted.

Mayor Hibbard Saved \$1,000,000

Boston, Mass.—Mayor Hibbard, in speaking at Melrose, said that his administration had already paid up about \$190,000 of debts contracted by previous administrations, and reduced expenses over \$800,000, making a total saving of about \$1,000,000. He expressed the hope that representatives from other communities of Greater Boston would support his request of the next Legislature to put all appointment of heads of Boston departments under civil service rules.

Proposed Form of Government for Portland

Portland, Me .- The plan for a new city government for Portland has been completed by a committee of the Board of Trade which has been at work on the matter for a year. The proposed plan is largely the work of James P. Baxter, who served five terms as Mayor. The old city charter has not been abandoned altogether and the new changes will be in the form of an amendment. The governing board is to consist of a Mayor and four Councillors. The Mayor will have all powers given in the old charter except the veto and will vote in the Council. Aldermen will be elected at large and both Mayor and Councillors will serve for two years. The Council will hold daily meetings. Nominations will be by petition and no party designations will be used on ballots. Council will have power of appointment and removal. Chiefs of departments may suspend employees, who may however appeal to Council. All bills against the city must be posted in the City Clerk's office 10 days before they are paid. Each month a published statement of all expenditures and revenues and a summary of the acts and proceedings of the City Council shall be printed and distributed on application. Elective officers may be recalled by popular vote. Franchises, to be granted for only 20 years, after passing Council are to be approved by popular vote. The charter as prepared will be submitted to the City Council and afterward to the Legislature. An election on it will probably be held in May.

Reading's Treasury Empty

Reading, Pa.—City Controller O. B. Dorward has made public announcement that, because of the depleted condition of the city treasury, no more current bills would be paid and no more orders on contract obligations of the city will be honored until further notice. The Controller adds that the small sum remaining in the treasury must be reserved for the payment of city officials during the remainder of the present fiscal year, which lasts until April 1, 1909. At the end of the year the city will have unpaid bills amounting to about \$100,000

Mayor Busse Recommends Longer Office Hours

Chicago, Ill.—Mayor Busse has recommended to Council a new schedule of office hours for officials and employees at the City Hall. He advises that the hours be from 8 to 12 in the morning and from 1 to 5 in the afternoon; the City Hall to be closed between 12 and 1. Now office hours vary, the employees starting work from 8.30 to 9.30, have their lunch from 11 to 2 and start home between 4 and 5. Mayor Busse himself is always in his office between 8.30 and 9 and sometimes as early as 8 o'clock. Frequently he is unable to reach certain of his cabinet heads until after 11 o'clock and the new rule is a gentle admonition to them. The other day he undertook a social stroll through the building after 9 o'clock and, after traversing several floors and not finding a single department head in, gave up the trip in disgust and returned to his own office.

Issues Bonds Against Uncollectable Debts

New York, N. Y.—At a session of the Legislative Committee investigating New York's finances, F. W. Smith of the Comptroller's office stated that the portion of the revenue bonds, which are issued in anticipation of taxes, are, when the taxes prove to be uncollectable, paid out of the proceeds of corporate stock, which is supposed to represent improvements whose cost should be distributed over a term of years. As the chairman of the committee stated, the city collects its debts by paying them itself. The witness testified further that the proceeds from sales of revenue bonds and corporate stock were not kept separate so that revenue bond money often went to pay corporate bonds indebtedness and vice versa.

REFUSE COLLECTION AND DISPOSAL

Estimates Cost of Flushing Paved Streets

Knoxville, Tenn.—The Board of Public Works will ask Council for \$6,000 to be applied for cleaning of the fifteen miles of paved streets in the city which they propose to clean with the flush tanks purchased during the past year. This will cost, for water, \$2,500, and the remainder will be paid in wages to the men employed with carts and shovels that follow the tanks and pick up the dirt that is washed into the gutters.

One Weekly Collection of Ashes Is Not Enough

Harrisburg, Pa.—The Sanitary Committee of Council is now inclined to think it made a mistake in requiring only one collection of ashes a week. During the summer this arrangement worked very well, but since cold weather has come on the property owners complain about the large quantity of ashes that it compels them to handle at one time.

City Engineer of San Jose Recommends Destructor

San Jose, Cal.—City Engineer Charles H. Pieper has submitted to Council a report on a suitable method of garbage disposal for San Jose. His conclusions are based upon the investigations of officials of San Francisco and Berkeley and the practical experience of the borough of Richmond, New York City, and of Seattle, Wash., and Vancouver, B. C. The plants in the Coast cities were personally inspected by the City Engineer. He recommends that a destructor of 32 tons capacity be erected in a substantial building, the complete plant to cost \$42,000.

Unions Oppose Long Term Garbage Franchise

Seattle. Wash.—The Central Labor Council has forwarded to the City Council a set of resolutions opposing the passage of pending bills which propose to grant a franchise for collecting and disposing of garbage for a period of thirty years. The resolutions favor the continuance of present methods until such time as the city can arrange to build incinerators and collect and dispose of the garbage.

RAPID TRANSIT Street Car Men Paid Daily

Philadelphia, Pa.—A novel pay system, designed to save much bookkeeping and clerical work, is to be put into effect on the Philadelphia Rapid Transit system. There will be a daily payment of wages to motormen and conductors. Each employee will be paid at his respective car barn as he finishes his run for the day. The receiving clerk at the barn will take the conductors' returns and audit them immediately. Should no error be found in either the returns or report, the crew will at once be paid the day's wage, the money being taken from the cash collected for the day.

Figures Regarding Overcrowding Obtained

Washington, D. C.—The method of studying the overcrowding of street cars employed by the District Railway Commission is illustrated in the following report of Secretary Eddy. The report showed that there were two more passengers per car than there were seats on the Brightwood avenue line.

	Nov. 30. B'twood.		Dec. 11-12. Tenleytown.
Total cars or trains		92	93
Total passengers		2,484	3,234
Total seating capacity		4.018	4.052
Average seating capacity		43.6	43.5
Average passengers, per car		27	34.88
Weather-Nov. 30, clear, mo	derately	warm. No	v. 27, clear,
moderately warm. Dec. 11, clou			

Roughly speaking, it is explained, these figures include passengers on cars coming into the heart of the city between 7 a.m. and 12.30 p.m. and on cars going out to the suburbs between 12.30 and 11 p.m. The figures for the total number of passengers, it is added, indicated more than half the traffic.

Jersey City Considers Street Car Regulation

Jersey City, N. J.—An ordinance is pending regulating street car traffic. The opening sections provide that the trolley company shall not open any streets, or pave or repave between trolley tracks without first securing a permit from the Street and Water Board.

Section 3 reads:

"No street railway car shall be used or operated upon the streets or public highways of Jersey City unless the machinery used thereon, or in connection therewith, and the wheels and other equipment therefor shall be in a safe and sound condition, and of such character as to make the least practicable noise in the running of said cars."

Here is section 4 of the new ordinance:

"No car shall be used or operated upon any of the streets or public highways of Jersey City as a street railway car, the wheels of which shall be flattened either in one or more places, and all wheels shall be considered under the provisions of this section as flat or flattened wheels which in the ordinary operation of the car produce either noise or jar on account of such flattening."

The part which refers to the employment of inspectors to watch and inspect trolley cars says:

"It shall be the duty of such employee or employees designated by this board for the purpose to make stated examinations of the wheels and machinery used upon the electric cars operated in Jersey City and to report in writing the condition of said cars to this board, this board reserving the right to appoint such inspector or inspectors as may be reasonably necessary to inspect and supervise the cars and machinery and wheels as aforesaid and pursuant to the terms of this ordinance."

Can't Tax Their Street Cars

Pittsburg, Pa.—Judge Evans, in Common Pleas Court, decided that the city of Pittsburg had no authority to collect a license tax from the Pittsburg Railways Company for running its cars through the streets. The city had entered suit against the company to recover \$94,200. The company contended that the license fee charged was for police supervision and inspection and the city had no power or authority to impose such tax upon street cars. In this the court concurred and the suit was ordered dismissed.

MISCELLANEOUS Cívic Clubs vs. Bill-boards.

Cincinnati. O.—The provisions of the building code regulating bill-boards were argued before Council at a meeting at which members of a number of civic societies were present. The legality of the regulations was questioned and Attorney Peck representing the Associated Organizations proposed that the provisions be drafted in several sections so that if the courts found one part of it illegal, they could knock out that particular section without declaring the whole law illegal. Representatives of the Painters' Union and the Central Labor Council favored bill-boards and opposed beautifying the city at the expense of a trade.

Shade Tree Ordinance

Pensacola, Fla.—The Park Commissioners recommend that Council adopt a tree planting ordinance covering the following points: That on streets in the residence portion of the city that are seventy, eighty, or one hundred feet wide, shade trees shall be planted fifteen feet from the property line and the curb shall be eighteen feet out from the property line, and that streets one hundred feet wide shall have a tree line along the center of the street with a twenty-foot parkway set apart in the center of such streets for trees and grass, and on such streets one hundred feet wide, that shade trees be planted not nearer than thirty feet apart, and no nearer than one-half of such distance from the intersection of streets. They recommend such trees as magnolia, live oak, and camphor. That the city contract to have grown ten thousand or more seedling pecan trees to be purchased by the city for street planting when such trees are of suitable size, with a strict ordinance, and penalty, to prevent injury to such trees when planted in the street. For streets fifty feet wide they recommend that the tree line be ten feet out from the property line, and the curb line fourteen feet out from the property line, and that only evergreen trees be planted such as magnolia, live oak, and camphor, provided that hardy palms may be planted in the center of thirty foot tree spaces, as heretofore suggested. They further suggest that whenever the grading plan of the city will materially change the present grade of the street, that the city engineer will notify the owners of property that the street will be filled or cut down so that the planting may be modified to suit the future grade, or be delayed if necessary until the street grade is established permanently.

Will Change System of Numbering Houses

Dallas, Tex.—Recommendations that the Philadelphia system of house numbering, that is, 100 numbers to the block, be adopted in Dallas, and that the work begin at once, were adopted by the Board of Commissioners. It is estimated by Mr. Doran, who submitted the recommendation, that the cost of renumbering will not exceed 25 cents to the house, and he desires that the work be done at once so the new numbers may be inserted in the new city directory for 1909. Along with Mr. Doran's report on the matter was a communication from Building Inspector Bristol making practically the same recommendations, also one from Postmaster Simpson, complaining of the irregularity of house numbers and of the frequency of duplications.

Tramp Question.

Wilkes-Barre, Pa.—Mayor Kniffen and the Police Department have a serious problem on hand in the solution of the tramp nuisance, which annually becomes more bothersome, especially at this period. During the term of Mayor Nichols it was decided that the hobo must earn his lodging, and all who applied for shelter at the city building were informed that the woodpile awaited them in the morning. This practice or rule forced many of the tramps to steer clear of the station house. Many who were never known to work hunted up positions and the old-timers were soon missed. Since then there has been no determined effort made to solve this question.

LEGAL NEWS

Summary and Notes of Recent Decisions — Rulings of Municipal Interest

WATER WORKS PLANT-DEFECTS WAIVER

Town of Sterling vs. Hurd.—Under the evidence, in an action by a contractor against a town for a balance due for constructing a water works system, held, jury questions whether the town's Engineer had accepted the work, or whether the town waived the right to have determined alleged defects in the work, and whether the contractor substantially complied with the contract, and if not, what consequent damage was sustained by the town. A contract must be construed as a whole, and not in detached parts. Where parties to a contract agree upon an arbiter to determine the quality of work done or materials furnished, and that his determination, in the absence of fraud or mistake. The authority of an Engineer, acting for a town under a contract for the construction of a water works system, being prescribed by the contract, the contractor was bound to know that any unauthorized act would not bind the town; i.e. the acceptance of materials or work not complying with the contract. A contract to construct a municipal water works system, providing that the town's Engineer should see that the contractor performed the work according to contract; that he might reject materials not conforming to the specifications; that the contractor should be responsible for the work until accepted by the town; that the system would be accepted if constructed according to the specifications; that when completed it would be tested by the Engineer; and that, if the test disclosed that it was constructed according to contract, the balance of the price would be paid—did not authorize the Engineer to accept the system or any part of it, nor reserve to the town the right to control and direct the construction. Under a building contract the acceptance by the owner's overseer of work as the construction progresses is not conclusive upon the owner, unless plainly so specified in the contract. Under a contract to construct a municipal water works system, the town's Engineer's acceptance of, or acquiescence in, the work as it progressed merely tends to sh

AUTHORITY OF MUNICIPAL OFFICERS

Roberts vs. City of St. Marys.—It is a general rule that persons dealing with the officers of a municipal corporation must ascertain the nature and extent of their authority; but in matters which are the proper subjects of municipal action, where there is no provision of law requiring that such authority shall be given by formal action of the governing body, it may be shown by a course of conduct which induces others honestly to assume and rely upon its existence.—Supreme Court of Kansas.

DEFECTIVE SIDEWALK—NEGLIGENCE

Smith vs. City of Tacoma.—Evidence that the iron cover of a coal hole in a sidewalk on an incline was very smooth and worn and slippery, that it had been maintained several years, and that a number of persons had slipped and fallen there, is sufficient to go to the jury on the question of the city's negligence. So such evidence is sufficient to go to the jury on the question of constructive notice to the city. Merely because the iron cover of a coal hole was wet with rain when a pedestrian was injured by slipping on it will not relieve the city from liability; the accident not having happened from the wet condition alone, but there having been actionable negligence in the smooth and slippery condition of the cover, even without the rain.—Supreme Court of Washington.

DEFECTIVE SIDEWALK—CARE REQUIRED

Billings et al. vs. City of Snohomish.—Where a sidewalk was originally constructed by laying three stringers parallel with the street and nailing boards crosswise thereon, and at the time of the accident the stringer next the property line had entirely rotted away, and the one next the street had so far decayed as to allow one of the boards forming the walk to sink, when stepped on, below its original level, it was unsafe for public travel. A city must take notice that constant use will wear out a wooden sidewalk, that nails will pull and supports decay in a few years, and it is not enough that the surface of the walk appears sound, but it must be examined and kept in repair.—Supreme Court of Washington.

REFERENDUM STATUTES-VALIDITY

Long vs. City of Portland et al.—The Constitution, reserving the initiative and referendum powers to the voters of every municipality as to municipal legislation to be exercised in the manner prescribed by general laws, is not self-executing, as it does not lay down the rules by means of which the right reserved may be given the force of law. The right of the referendum reserved to the voters of every municipality by the Constitution, is reserved to the voters of a city regardless of any provision in the charter thereof, and it is superior to the charter, and the provision amounts to an amendment of the charter, and is sufficient authority for legislation necessary to give it effect. A statute called for by a constitutional provision is not unconstitutional because it conflicts with some other constitutional provision. The Act of February 25, 1907, providing for the carrying into effect of the initiative and referendum powers reserved by the Constitution, is not an amendment of the Portland city charter, within the Constitution, prohibiting the Legislature from amending any municipal charter, but suspends the operation of the charter, and an ordinance of the city on which the referendum is invoked takes effect from the proclamation of the Mayor, as provided in the act.—Supreme Court of Oregon.

LICENSES—INTERSTATE COMMERCE

City of Kinsley vs. Dyerly.—In a prosecution for the violation of a city ordinance imposing a license tax upon persons soliciting orders for the sale of goods, where it is shown that the defendant is the agent of a merchant of another State, and carries samples of goods, and solicits orders, which he sends to his principal for approval, the mere fact that the principal, after accepting the order, ships the goods to the same agent, with authority to deliver them to the purchaser and collect the price, will not prevent the transaction from being "interstate commerce." The right of a merchant of another State to sell his goods in this State carries with it the right to deliver them, and to employ for that purpose any agency he may deem proper, provided that at no time before the delivery the goods become so mingled with the common mass of property here as to deprive the transaction of its interstate features. In a case like that referred to first, if there be a doubt as to whether the sale was completed by the acceptance of the orders by the principal and his shipping the goods, the contrary cannot be assumed in order to sustain a conviction. The prosecution must establish its case.—Supreme Court of Kansas.

REMOVAL OF TREES FROM STREET

Rosenthal vs. City of Goldsboro.—The decision of a municipal corporation that the removal of trees was necessary for the proper use of a street will not be interfered with by the courts unless the action was so unreasonable as to amount to an oppressive and manifest abuse of the discretion. The general power of a municipal government over its streets extends as well to the power to order removal of trees for the preservation of city sewers laid in the streets as for their removal as an obstruction to travel. A municipal corporation having a right, in its discretionary power to care for its streets, to order the removal of shade trees for preservation of sewers laid in the street, an abutting owner was not entitled to compensation for the trees removed, and therefore was not entitled to notice of the proceedings.—Supreme Court of North Carolina.

DISTRIBUTION OF ROAD TAX

City of Chadron vs. Dawes County.—Cities of the second class and villages were road districts, within the meaning of section 76 of the road law as it existsed prior to the amendment of 1901, and as such were, except where otherwise provided, entitled to one-half of the moneys arising from the road tax levied by the County Commissioners upon the property situated within their limits. And where a county has collected a road tax, levied upon property within the limits of such city or village, it holds one-half of the amount so collected as a public trust, and is charged with the continuing duty to pay the same over to such city or village. In such a case, as between the county and city or village, the county does not hold such collections in its own right, but the possession of the one is the possession of the other. The possession of the county is precarious, and not animo domini; and, being trustee, it cannot acquire the trust fund by lapse of time. And in such a case, where the county appropriates that portion of the road tax which should be paid to said city or village, by transferring it to its general fund, it thereby becomes liable to such city or village for the amount so appropriated, and may be proceeded against directly, and the fact that the County Treasurer and his bondsmen may also be liable therefor is immaterial.—Supreme Court of Nebraska.

THE MUNICIPAL INDEX

In Which Are Listed and Classified by Subjects All Articles Treating of Municipal Topics Which Have Appeared During the Past Month in the Leading Periodicals

ROADS AND PAVEMENIS

Good Roads and How It Is Done in New York, Address before Good Roads Automobile Convention of New

Jersey. By Frederick Skene. I p., Good Roads, December. Massachusetts State Highways. Il-lustrated, 5 pp., Good Roads, Decem-

Suggestions on the Construction of the Modern Highway. Paper before International Road Congress. By J. F. Byxbee, Jr. 1 p., The Surveyor,

New Era of Road Construction. Address before Good Roads Automobile Convention of New Jersey. By James E. Owen. 2 pp., Good Roads, De-

cember.
Road Construction and Maintenance Road Construction and Maintenance in Gloucester County, England. Paper before International Road Congress. By Robert Phillips. 2 pp., Engineering-Contracting, Dec. 16.

Preservation of Park Roads. By C. S. Bromwell. 2 pp., Good Roads, December.

Roadways and Streets. Paper before Utah Society of Engineers. By Louis C. Kelsey. 6 pp., Journal of Engineering Society, October.

Vehicles, Effect of the Road Surface on Paper before International Popularity

on. Paper before International Road Congress. By C. S. Rose. 2-3 p., Surveyor, Dec. 4.

Improvement in Self-Propelled Vehicles for the Reduction of Road Wear. Paper before International Road Con-

Paper before International Road Congress. By Col. R. G. Crompton. 1 p., Surveyor, Nov. 20.
Roads for Heavy Traffic. Paper before International Road Congress. By H. P. Maybury. 3-4 p., Engineering Record. Nov. 28.
Highway Administration. 2-3 p., Contract Journal, Nov. 18.
Systems of Highway Administration Compared. A comparative examination of the highway systems of 18 foreign

Compared. A comparative examination of the highway systems of 18 foreign countries. By W. Rees Jeffreys. 3 pp., The Surveyor, Dec. 11.
Road Maintenance in France and Ireland. Paper before International Road Congress. By R. H. Dorman. 11-2 pp., Surveyor, Dec. 4.
Road Building in the United States, Cost of Report of Office of Public Roads. Department of Agriculture. By

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trated, 2-3 p., Engineering Record, Dec. 5.

Experience with the Road Drag Under Various Conditions. From the Annual Report of the Illinois Highway Commission. By S. W. Nottingham. 2-3 p., Engineering-Contracting, Nov.

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Pp., Dec. 11.

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ber.
Dust Suppression in Public Parks. Paper before International Road Congress. By J. A. Pettigrew. 1 p., The Surveyor, Dec. 11.

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tailed account of methods and results. 1 1-2 pp., Municipal Journal and Engi-

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Akonia Process of Dust Prevention.
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Account of experiments in France. 1-4 Municipal Journal and Engineer,

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Municipal Theater, Invercargill, New Zealand, and Its. Illustrated, 1 p., Municipal Journal, Nov. 20.

NEWS OF THE SOCIETIES

City Clerks of Kansas.—City Clerk C. B. Burge, of Topeka, is urging the formation of an organization among the cities of Kansas to be called the "City Clerks' Association of Kansas." The City Clerks of the first-class cities will be eligible to the association and will be eligible to the association and they will probably meet in Topeka some time during the legislative session. The association will be a great thing for the City Clerks of the State as they will be able to exchange ideas, improve legislation and talk of the work in their representation of the control of the work in their representation of the control of work in their respective cities.

American Institute of Chemical Engineers.—The first annual meeting of the American Institute of Chemical Engineers met Dec. 27-29 at Carnegie Technical Schools, Pittsburg, Pa., with nearly 50 per cent of its membership present. The association has nearly 100 members and, though young, is growing and at the recent meeting applications for membership had come from Spain, Hungary, England and Cuba. The annual election of officers Cuba. The annual election of officers: resulted in the choice of all old officers: President, Samuel P. Sadtler, Philadelphia; vice-presidents, Charles F. McKenna, New York; H. A. Hunicke, St. Louis, and Edward G. Acheson, Viceore Falls N. V. corretary, John St. Louis, and Edward G. Acheson, Niagara Falls, N. Y.; secretary, John C. Olsen, Brooklyn; treasurer, William A. Booth, Syracuse, N. Y.; auditor, Richard K. Meade, Nazareth, Pa.

Association of Township Supervisors. -A meeting at Williamsport, Pa., was addressed by Engineer Jackson, of the State Highway Department, who advocated cash road taxes with a state bonus of from 25 to 50 per cent; a more systematic plan of construction and maintenance of roads; wide tires on all improved roads; and a graduated automobile tax which would more equitably distribute taxation. Mr. Jackson complimented Lycoming County on its good roads, saying that the results accomplished had given the county first place in the good roads movement in Pennsylvania. The committee appointed to award the good roads prizes made the following awards.

awards:

Class A.—First prize of \$300, to Cogan
House Township; second prize of \$150, to
Loyalsock Township; one-third prize, \$75,
to Lewis Township; one-third prize, \$75, to
McIntyre Township; one-third prize, \$75, to

McIntyre Township; one-third prize, \$75, to Eldred Township.

Class B.—First prize, \$150, to Eldred Township; second prize, \$75, to Old Lycoming Township; third prize, \$45, to Brown

Indiana Sanitary and Water Supply Association.—A tentative program for the annual midwinter meeting of the association has been prepared and a number of speakers obtained for the occasion, set for January 14, at the State House at Indianapolis. The topics will largely to a discussion of stream pollution, its effects on water supply systems and health and the best means reducing the pollution. Among the names to appear on the program as now drawn are the new Governor, Thomas R. Marshall; Dr. J. N. Hurty, Secretary of the State Board of Health; Prof. Severance Burrage, Purdue University; Robert McCormick, President of the Chicago sanitary district; J. H. Brewster, W. E. Taylor, chief engineer, Terre Haute Water Works Company; Frank Jordan, Indianapolis Water Works Company; Mayor Bookwalter, Indianapolis; Representative Mc-Indianapolis; Representative Mc-Ginnis, H. E. Barnard, food and drug commissioner, and member of the Lake

Michigan Pure Water Commission.

Engineering Association of the
South.—The Association has adopted
the following resolutions:

the following resolutions:
Whereas there is pending before the House of Representatives and the Committee on Agriculture, Senate Bill No. 4825, for the establishment of the Appalachian and White Mountain Forest Reserve; and Whereas the establishment of such forest reserves is necessary for the preservation of natural resources and to prevent the wasteful destruction of timber and farming lands and other natural resources. Now, therefore.

the wasteful destruction of timber and farming lands and other natural resources. Now, therefore,

Be it resolved by the Engineering Association of the South, that we hereby most heartily express our approval and desire for the establishment of National forests, as provided in said bill, and we hereby urge upon the Congress of the United States immediate favorable action thereon. Be it further resolved, that we urge upon Congress the adoption of a system of forestry, extending throughout the country, having a definite forest policy which will insure the extension of the National forests to all sections of the country where it may be desirable to locate them.

Be it further resolved, that a copy of these resolutions be sent to our Senators and Representatives in Congress and to the Appalachian National Forest Association, Washington, D. C., for presentation to the House Committee on Agriculture.

Civic League of St. Louis.—At the

Civic League of St. Louis.—At the annual banquet of the League, Councilman Frank P. Cruden delivered an adattacking the spoils sy distribution. Charles dress attacking system criticised the system of administering institutions, particularly the City Hospital. Henry T. Kent spoke of the needs for parks and playgrounds.

Boston Chamber of Commerce.—The

boards of directors of the Boston Chamber of Commerce and the Boston Merchants Association have recommended to their respective associations the advisability of consolidation. former society numbers 1,000 members, The united organizathe latter 1,500. tion will take the name Chamber of Commerce.

Engineers' Club of Cincinnati .the annual meeting December 17 at Cincinnati, O., the following officers were elected: President, F. M. Crockwere elected: President, F. M. Crocker; vice-president, E. H. Berry; secretary and treasurer, E. A. Gast; directors, J. N. Coldwell, J. A. Lilly, H. C. Innes. The membership of the club has increased from eighty to one hundred state in the left two weeks.

dred and sixty in the last two years.

Engineers' Society of Western New
York.—At the annual meeting, held De-York.—At the annual meeting, held December 12, 1908, at the Buffalo Public Library, Buffalo, N. Y., the following officers were elected: William G. Houck, president; Frank V. E. Bardol, Frank N. Speyer, vice-presidents; Leslie J. Bennett, George C. Diehl, John G. Üllman, directors; Thomas J. Rogers, treasurer; William A. Haven, librarian; Elwin G. Speyer, secretary.

New England Water Works Association.—The annual meeting of the association will be held at Hotel Brunswick, Copley Square, Boston, Mass., Wednesday, January 13, 1909. The pro-gram follows: 10 o'clock—The headquarters in Tremont Temple will be open for the use of members. 11:30 o'clock—Meeting of the executive como'clock—Meeting of the executive committee at the headquarters, Tremont Temple. I o'clock—Lunch will be served at Hotel Brunswick, Copley Square; tickets, \$1.50, to be had at headquarters during the morning and later at the hotel. 2 o'clock—Informal description of the water works of Havana, Cuba, illustrated, by Bertram Brewer, City Engineer of Waltham, Mass.; regular order of business, address of retiring president, report of ecitor, report of auditing committee, editor, report of auditing committee. election of officers, report of tellers pointed to canvass ballots; report of the following committees: "Committee to look after and keep track of legislation and other matters pertaining to the conservation, development and utilizaconservation, development and utilization of the natural resources of the country," M. N. Baker, chairman, associate editor "Engineering News," 220 Broadway, New York City; "Committee to prepare a standard specification for fire hydrants," H. O. Lacount, C. E., chairman, Boston, Mass.; "Committee to collect data relating to awards that have been made for damages resulting to collect data relating to awards that have been made for damages resulting from the diversion of water," Charles T. Main, C. E., chairman, 45 Milk street, Boston, Mass.; "Committee to gather statistics relating to the depth at which water pipes are laid, and the resulting experience with frozen pipes, Frank A. Barbour, C. E., chairman, 1120 Tremont Building, Boston, Mass.: "Committee to compile information relating to awards that have been made in water works valuation cases." Alfred E. Martin, Springfield, Mass., is president and Willard Kent, Narragansett Pier, R. I., secretary of the asociation.

Public Health School.—President Butler of Columbia University, New York City, has appointed a committee of scientists, physicians, and economists to look into the matter of a School of Sanitary Science and Public Should the report of mittee be favorable to the establishment of such a faculty at Columbia, it will be movement of its kind in the United States. The chairman of the committee is Dr. Norman E. Ditman of the College of Physicians and Surgeons, and he is assisted by these memgeons, and he is assisted by these members of the Columbia University faculty; Samuel W. Lambert, M. D.; Philip H. Hiss, M. D.; M. Allen Starr, M. D.; Frederick S. Lee, Ph. D.; Edward T. Devine, Ph. D.; Livingston Farrand, M. D.; Edwin R. A. Seligman, Ph. D.; Gary N. Calkins, Ph. D.; William H. Rure, C. F. D. Ph. D.; Gary N. Calkins, Ph. D.; William H. Burr, C. E.; Dean Goetze of the School of Engineering, and Ru-dolph Tombo, Ph. D. As a great deal of work must be gone over, the commit-tee will not be able to report for some The aims of the school have been lly determined. Two courses of partially determined. instruction will be offered, the one leading up to the degree of Public Health Officer, the other presenting a certificate after a shorter course of study in the work of sanitary inspection. The the work of sanitary inspection. The prevention of tuberculosis, milk inspection, dangerous occupations, water and ice supplies, public baths, tenement house sanitation, street cleaning, and river pollution are a few of the studies the students in the sanitation course would take up.

American Society of Civil Engineers. The fifty-sixth annual meeting will be held on Wednesday and Thursday, January 20 and 21. Arrangements for the meeting have been placed in the hands of a committee composed of Messrs. J. A. Bensel, J. Waldo Smith and Charles Warren Hunt. By invitation of the Department of Bridges and the Commissioner of Docks and Ferries, visits will be made to the Queens-boro (Blackwell's Island) bridge, and to the Chelsea section of docks, North River. These visits will be made directly after lunch, which will be served at the Society House on Wednesday, and the party will be conveyed in automobiles through the courtesy of the Pennsylvania Steel Company, Messrs. Snare and Triest, and R. P. and J. H. Snare and Triest, and R. P. and J. H. Staats. On Thursday, by invitation of the Board of Water Supply, there will be an excursion to the Ashokan dam. The party will go by special train on the West Shore and the Ulster and Delaware Railroads. Lunch will be served at the camp of the contractors through the courtesy of Messrs. Mac-Arthur Brothers Company and Winston & Co.

Fire Prevention Conference.-Pursuant to the suggestion of Gov. Patterson that a conference be called to consider the reduction of fire waste in Tennessee, Insurance Commissioner R. E. Folk has set Saturday, January 30, 1909, for the meeting, and arrangements are now being made. A plan providing for delegates has been adopted, and the conference will consist not only of fire insurance men, but of well known citizens and officials as well. The conference will be held in the Hall of Representatives at the State The following citizens in each Capitol. county are suggested as members of this conference: (1) the Mayor of the county seat town; (2) the leading merchant; (3) the leading manufacturer; (4) members of the General Assembly; (5) five local fire insurance agents who represent respectively the largest number of companies; (6) five representatives of each commercial organization; (7) ten menat-large in the State, selected by

American Association for the Advancement of Science.—At the meeting of the association, Baltimore, Md., one day, December 31, was given over to a joint session of the Committee of One Hundred, the American Health League and the National Legislative Conferand the ence of the American Medical Association. Professor Irving Fisher, of Yale, spoke of the work of the Committee of One Hundred and of the Health One Hundred and of the Health League now numbering 23,000 mem-bers. Other addresses were made by Walter Wyman, Surgeon-General of the Marine Hospital Service; Dr. H. W. Wiley, of the Bureau of Chemistry of the Department of Agriculture; Dr. L. O. Howard, of the Bureau of Entomology, whose paper consisted of a treatise on the danger of infection from insect bites, and by Horace Fletcher, who spoke on economical questions connected with the movement.

American Anti-Accident Association. —President Thomas D. West, of Sharpsville, Pa., is arranging to hold a public meeting in New York some time in January. The object is to consider what universal actions are best to aid the prevention of accidents, with their accompanying losses of life property, and what methods will be most humane and reliable to compenthe injured and afflicted through accidents and also prove the most just for all concerned.

Calendar of Meetings

January 6.

American Society of Civil Engineers.—
Regular semi-monthly meeting, Society
House, 220 West Fifty-seventh street.
New York City.—Charles Warren Hunt.
Secretary.

Secretary.

January 11-16.

National Association of Cement Users.—

Annual convention at Cleveland, O.—Secretary, Geo. C. Wright, Harrison Bldg..

Philadelphia, Pa.

January 12-15.

Michigan Engineering Society.—Anual convention, Ann Arbor, Mich.—Alba L. Holmes, Secretary, 574 Wealthy avenue, Grand Rapids, Mich.

nue, Grand Rapids, Mich.

January 13-14.

lowa Brick and Tile Association.—Annual Convention, Mason City, Ia.—C. B. Platt, Secretary.

January 13-14.

lowa Engineering Society.—Meeting, Waterloo, Ia.—A. H. Ford, Secretary, Iowa City, Ia.

January 14-16.
January 14-16.
Indiana Engineering Society.—Annual convention, Indianapolis, Ind.—Charles Brossman, Secretary, Union Trust Building, Indianapolis, Ind.

January 19.

Wood Preservers' Association.—Annual meeting, Chicago, Ill.—C. M. Berry, Secretary, Topeka, Kan.

January 19.
South Carolina Good Roads Association.
Columbia, S. C.—Fingal C.

South Carolina Good Roads Association.
Convention, Columbia, S. C.—Fingal C.
Brach, Secretary, Columbia.

January 19-21.
American Society of Heating and Ventilating Engineers.—Fifteenth annual meeting, Engineering Societies Building.
29 West Thirty-ninth street, New York, N. Y.—W. M. Mackay, Secretary, P. O.
Box 1818, New York, N. Y.

January 20.

American Society of Civil Engineers.—
Annual meeting at Society House, 220
West Fifty-seventh street, New York.—
Charles Warren Hunt, Secretary.

January 26-28.
Ohio Engineering Society. — Annual convention, Columbus, O.—Paul Hansen, Secretary, Harrison Building, Columbus, O.

January 27-29.
Illinois Society of Engineers and Surveyors.—Annual meeting, Chicago, Ill.—
E. E. R. Tratman, Secretary, 1636 Monadnock Block, Chicago, Ill.

January 28.

Canadian Society of Civil Engineers.—
Annual meeting, Toronto, Ont.—C. H.
McLeod, Secretary, 413 Dorchester street,
W., Montreal, P. Q.

February 1-6.
National Brick Manufacturers' Association.—Twenty-third Annual Convention, Rochester, N. Y.—Theo. A. Randall, Secretary, Indianapolis, Ind.

June 8-12.

American Water Works Association.—
Twenty-ninth annual convention, Milwaukee, Wis.—J. M. Diven, Secretary.
14 George St., Charleston, S. C.

PERSONALS

BARRALLY, THOMAS W., Lockport, N BARRALLY, THOMAS W., Lockport, N. Y., has been appointed engineer of the Western Division of the Erie Canal. Mr. Barrally was City Engineer of North Tonawanda for several years.

BATEMAN, WILLIAM M., Lexington, Ky., W. H. McCorkle and A. M. Harrison have been appointed members of the first Board of Public Works of the city. BENZENBERG, G. H., Milwaukee, Wis., has been appointed consulting engineer by the Public Service Board of Dayton, O., to consider the question of extension

O., to consider the question of extension of the Dayton water supply.

Сок, Jesse B., San Francisco, Cal., Captain and Property Clerk of the Police Department, has been appointed Chief of Police to succeed the late William J. Biggy.

CANTY, DENNIS G., Chicopee, Mass., has been appointed Superintendent of Streets.

CROKER, EDWARD F., Chief of the New York Fire Department, recently celebrated the ninth anniversary of his ap-

pointment as Chief. This is his twenty-fifth year as a fireman, and he is 45 years old. He entered the service in 1884, in 1888 was made a foreman, four years later a battalion chief, and in 1898 a deputy chief. He believes that five hours' sleep and two meals a day are enough for any man, and his hours often include all of the and his hours often include all of the twenty-four. His days are spent at Fire Headquarters, in East Sixty-seventh street, and his nights in Great Jones street. In his famous automobile he responds to every alarm from a dangerous section, often as many as ten a night. He is a nephew of Richard Croker, former head of Tanmany Hall.

Dale, John, Vidalia, La., has been appointed Mayor by Governor Jared Y. Sanders to fill the unexpired term of Joseph M. Reeves, resigned.

DE GROFF, H. W., Amsterdam, N. Y., has been appointed Deputy State Engineer.

ETHERIDGE, W. T., Pensacola, Fla., Captain of Police, in charge of the night force, died December 26, from the effects of injuries received in being thrown from his horse.

EDWARD, CHARLES S., Riverhead, L. I., Y., has been appointed Highway Commissioner.

Folsom, Lenpha A., Boonville, Ind., has been reappointed City Attorney for the ninth time.

the ninth time.

Humphrey, Clarence B., Swampscott, Mass., has been appointed a member of the Water Board, succeeding Benjamin G. Ingalls, resigned.

Jones, Leon V., Rome, N. Y., alderman, has been appointed President of the Board of Public Works to succeed Abner S. White resigned

Board of Public Works to succeed Abner S. White, resigned.

Landreth, Wm. B., Schenectady, N. Y., has been appointed special deputy in charge of Erie barge canal work.

Martin, Edward, Hillsbord, Tex., has been unanimously elected chief of the Fire Department.

Mears, Charles A., Norfolk, Va., has been appointed Chief of Police, succeeding John T. Hammer, resigned.

Northington, M. C., Clarksville, Tenn., has been elected Mayor.

Scruggs, L. C., Florence, Ala., has been appointed City Engineer, succeeding the L. Co., recognized.

SNYDER, HENRY F., Albany, N. Y., President of the Common Council, has become Mayor, succeeding Charles H. Gaus, who resigned to become State Comptroller.

TAYLOR, JOHN S., Sheridan, Wyo., who had been serving his fifth year as Mayor, died December 26.
VAN RIPER, CHARLES T.

Tex., has been appointed Chief of Police,

Tex., has been appointed Chief of Police, succeeding Gus A. Mauermann, resigned. The new chief has been a city detective. Webber, Charles H., Boston, Mass., retired Captain of the Fire Department, died December 20.

WILLIAMS, GEORGE D., Syracuse, N. Y., been been excepted Freitners of the Fest.

has been appointed Engineer of the Eastern Division of the Erie Canal.

The following Mayors have been elected in Washington:

Nashington:
Puyallup, Melrose.
Ruston. James Garrison.
South Bend, W. P. Cressy.
Tukwila, Joel Shomaker.
Georgetown, John Mueller.
Renton, Benjamin Tichnor.
Kent, M. M. Morrow.
Auburn, L. C. Smith.
Vancouver, J. P. Kiggins.
Olympia, Mitchell Harris.
Snohomish, C. H. Lamprey.
North Yakima, P. M. Armbruster.
Sedro Woolley, C. E. Bingham.
Anacortes, W. Z. Wells.
Wenatchie, John Zellattey.
Hartline, E. O. Whitney.
Oroville, McMahan.
Pullman, E. B. Carpenter.
Leavenworth, L. J. Nelson.

Yakima, John L. Druse.
Palouse, B. H. Farnsworth.
Port Townsend, Max Gerson.
Yacolt, W. J. Hoag.
Carnas, J. A. Cowan.
Dayton, Benbow.
Raymond, A. C. Little.
Centralia, J. P. Guerrin.
Tenino, L. H. Miller.
Tenino, L. H. Miller.
Tumwater. A. Whitmarsh.
Chehalis, William West.
Buckley, David F. Morris.
Shelton, George Drahm.
Steilacoom, Eugene Church.
Colfax, William Lippitt.
Davenport, M. C. Graham.
Clarkston, D. B. Parks.
Kennewick, A. E. Johnson.
Roslyn, John G. Green.
Palouse, B. H. Farnsworth.
The following Mayors have b

The following Mayors have been elected in Oregon:

Milton, N. A. Davis. Freewater, J. H. Small.

INCORPORATIONS

American Chinese Engineering Company, New York, N. Y.; engineering work in America and China; capital, \$100,000. In-corporators: Theodore M. Foote, 253 Put-nam avenue, Brooklyn; Frank Lee Lowe, 203 West Twenty-third street; Goon Chung, 3 Pell street, both of New York.

Boston Sanitary Wagon Co., Dorchester, Mass.; street cleaning; capital, \$50,000. President, Allison G. Catheron, Swampscot; Treasurer, Melville F. Rogers, and Clerk, Edgar S. Dorr, both of Dorchester.

John B. Carter Co., East Orange, N. J.; contracting, engineering and construction; capital, \$150,000. Incorporators: Charles O. Geyer, Frank E. Ruggles, Gaston G. L. Valle, as above.

Valle, as above.

Elliott & Barry Engineering Co., East St.
Louis, Ill.; engineering and construction
work; capital, \$30,000. Missouri corporation.

Federal Telephone and Telegraph Company, Buffalo; telephone and telegraph;
capital, \$6,000,000. Incorporators: Burt G.
Hubbell and W. H. Andrews, Buffalo;
Henry H. Persons, East Aurora, N. Y.

Henry H. Persons, East Aurora, N. Y.

General Service Heat and Power Company, East Orange, N. J.; to manufacture and generate light, heat and power; capital, \$100,000. Incorporators: J. M. W. Kitchen, Frank R. Wickes, Harry H. Picking, as above.

Genesee Pump Company, Rochester, N. Y.; to manufacture pumps; capital, \$100,000. Incorporators: John O. Roe, William H. Williams, George H. Smith, Rochester; Thomas T. Graser and Charles H. Rowland. Brighton.

ter; Thomas T. Graser and Charles H. Rowland, Brighton.

Headley Good Roads Company, Wilmington, Del.; capital, \$25,000. Incorporators: W. T. Headley and D. L. Sage. Philadelphia; Harry W. Davis, Wilmington.

International Light and Power Company, Augusta, Me.; to supply electricity and gas; capital. \$1,000,000. President and Treasurer, J. Berry; Clerk, J. Williamson, both of Augusta.

urer, J. Berry; Clerk, J. Williamson, both of Augusta.

Martinsburg and Charlestown (W. Va.) Gas and Water Company, Camden. N. J.; capital, \$300,000. Incorporators: William P. Huston, John H. Blye, William Goodwin,

as above.

Murphysboro Paving Brick Compai Murphysboro, Ill.; to manufacture clay a shale products; capital, \$100,000. Incorpators: William H. Hill, H. H. Jenkins, C. Barnard. Brick Company,

C. Barnard.
Pleasantville Heat, Light and Power Company, Atlantic City, N. J.; heat, light and power; capital, \$50,000. Incorporators: Savery Bradley and John P. Tompkins, Atlantic City; Joseph Thompson, Ventnor, N. J.

N. J.

St. Louis and St. Charles Bridge Company, St. Charles, Mo.; capital, \$200,000. Incorporators: Arthur P. Thompson, C. H. Wilcox, G. C. Strauss, all of Chicago, Ill., and others; will take over bridge spanning Missouri River at St. Charles; company will issue \$200,000 of bonds.

San Augustine Light and Power Company, San Augustine, Tex.; capital, \$6,000. Incorporators: F. K. Nance, W. N. Foster and T. L. Foster.

Sierra Electric Power Company, Berkeley, Cal.; capital, \$500,000. Incorporators: Frank E. Horton, of Berkeley; Boyd L. Wilson, of Oakland, and others.

Stamford Sewerage Company, Stamford.

Oakland, and others.
Stamford Sewerage Company, Stamford.
Tex., increased capital stock from \$5,000 to \$25,000.
Tri-City Electric Company, 408 Sixteenth street, Moline, Ill.; electrical contractors and manufacturers; capital, \$50,000. Iowa corporation.

and manuacturers; capital, \$50,000. Iowa corporation.

Waurika Ice and Electric Company, Waurika, Okla.; capital, \$50,000. Incorporators:

M. C. Erwin and M. Griffin O'Neil, of Dalass, and F. B. Martin, of Waurika.

THE WEEK'S CONTRACT NEWS

Relating to Municipal and Public Work—Street Improvements—Paving, Road Making, Cleaning and Sprinkling—Sewerage
Water Supply and Public Lighting—Fire Equipment and Supplies—Bridges and Street Railways—Sanitation
Garbage and Waste Disposal—Police, Parks and Miscellaneous—Proposals and Awards

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we can not guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also corrections of any errors discovered.

BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	Address Inquiries to
			STREET IMPROVEMENTS	
Florida. Pennsylvania. New Jersey Indiana. Maryland Texas. Massachusetts	Miami. Wilkes-Barre. Jersey City. Bedford. Rockville Houston.	Jan. 7, 7:30 p.m Jan. 11 Jan. 11 Jan. 11, 1 p.m Jan. 12, noon Jan. 12, noon Jan. 12, noon	Bldg. road from city limits to Nat'l Mil. Park. Bldg. gravel roads Nos. 1 to 10, eight in Clay township Paving portions of 5 streets; separate bids. Repairing and maintaining 8 miles asphalt pavements Furn. brick and paving 1,814 sq. yds. Randolph Ave. Constructing 13,900 ft. of macadamized road. Improving Co. hwy., bet. Bradley Lane and Kensington. Furnishing two road graders. Edgestone contract for 1909, inc. 25,000 ft. curb, 25 catch basin	E. S. Frederick, City Engineer. Burt Finch, City Engineer. Geo. T. Bouton, Clk. St. & Water Bo Walter G. Owen, County Auditor. Robt. G. Hilton, Clk. Co. Comrs. John B. Ashe, County Auditor.
Missouri New Jersey Ohio Indiana Oklahoma Ohio Kansas Florida Illinois Indiana Alabama Indiana Indiana Shorio British Col'bia	St. Louis. Flemington Toledo. Lafayette Tulsa. Cleveland. Emporia. Pensacola. Naperville. Indianapolis. Noblesville. Huntsville Marion. Cincinnati. No. Vancouver.	Jan. 12. Jan. 14, 10 a.m. Jan. 15. Jan. 15. Jan. 15. Jan. 15. Jan. 16, 11 a.m. Jan. 18, noon. Jan. 18, a p.m. Jan. 18, 10 a.m. Jan. 19, Jan. 19, Jan. 19, Jan. 20. Jan. 22, noon. Jan. 25.	stones. Brick paving portions of 5 streets; cost, \$37,000. Paving various streets and avenues. Macadamizing 30,079 lin. ft. road at Pleasant Run. Paving Hawley St. Bldg. gravel road on line bet. Tippecanoe and Warren Cos. Thirty blocks of brick and asphalt paving. Grading, draining, etc., center road No. 2, in 2 townships. Brick paving on concrete, 14,000 sq. yds.; est., cost, \$30,000. Constructing 634,000 sq. ft. concrete sidewalk Macadamizing, grading, curbing, etc., sundry streets. Constructing rarvel roads. Paving 3 streets with granitoid, brick, asphalt or other material. Bldg. 5 gravel roads; brick paving, 4 streets, etc. Improving Fenton Ave., from Cleves to Harrison Pike. Road machinery as follows: Comp. steam 10-ton road roller with scraper; hand truck for fuel oil and tool tender for roller; water cart with dis. pipe and suction hose; traveling van and two 4-ton traction wagons; portable stone breaker, etc., inc. elec. motors, etc.; air compressor; rock drills, etc. Brick or creo. wood block paving, 6,000 sq. yds.; begin May 1. Wood block paving on concrete, portion Washington St. Grading, draining, etc., Columbia road.	A. J. O'Reilly, Pres. Bd. Pub. Impts John W. Sharp, Dir. Freeholders. Board of Public Service. J. P. Foresman, County Auditor. T. C. Hughes, City Engineer. A. B. Lea, County Surveyor. Alva J. Smith, City Engineer. L. Earle Thornton, City Engr. P. E. Kroehler, Pres. Bd. Local Imp. Albert Sahm, County Auditor. N. W. Cogwell, County Auditor. R. E. Smith, Mayor. A. Y. Stout, County Auditor. Fred Dreihs, Clk. Co. Comrs.
Ohio	Cleveland	Feb. 3, 11 a.m	Grading, draining, etc., Columbia road	A. B. Lea, County Surveyor.
Minnesota	Duluth	Jan. 7	Furnishing cast-iron water and gas pipe	L. N. Case, Mgr. Wat. & Lt. Bd.
Yennessee	Nashville	Jan. 7	Furnishing cast-iron water and gas pipe. Furn. f. o. b. Nashville 276 6-in., 11 8-in., 13 12-in. valves; 35 tons specials, and 145 fire hydrants Bldg. north half Walkill pressure tunnel under Walkill River and valley inc. 3 shafts 350 to 480 ft. concrete conduit etc.	J. B. Alexander, Chm. Bd. Pub. Wk
Jtah Rhode Island	Salt Lake City Providence	Jan. 8 Jan. 8, 11 a.m	and valley, inc. 3 shafts 350 to 480 ft., concrete conduit, etc.; contracts Nos. 36 and 37; old bids in Dec. 23 issue rejected. Constructing pipe line in 19th Ward Irrigation Dist	
Minnesota	Minneapolis	Jan. 8, 7:30 p.m	346 tons, 6-in.; 10 tons, 4-in.; del. bet. March and June Furn. 1,784 tons c. i. pipe; 125 tons specials; 100 d. s. hydrants; one hundred 6-in.; fifteen 8-in.; twelve 12-in.; two 24-in. valves, del. during 1909 for w. w. construction	
			Constructing and leasing to city, additions and improvements to water works for 10 or 25 years; bond, \$100,000	Jacob S Clouds City Clerk
Kansas Kansas Georgia Kansas	Moundridge East Point	Jan. 18	Furn. f. o. b. cars K. C. all pipe and specials for 1909. Furn. and erecting 2,000,000-gal pumping engine. Laying 4-inch water main, etc., in Sixth St. Erecting water tank 140 ft. high, 150,000 gals. capacity. Constructing water works system for city. Constructing \$85,000 water works and electric light plant. Bldg. w.w. system; Burns & McDonnell, K.C., Mo., Engrs Furn. mat. and bldg. water works system, inc. 1,000 tons c. i. pipe; 16 tons specials; 76 two-way hydrants; ten 10-in., twenty 8-in., sixty 6-in. gate valves; three 8-in. check valves; one-pressure release valve; 1,100,000-gal. gaso. engine and power pump, 100 lbs. pressure; seven 4-in. artesian wells; conc. found., pump, plant bldg., conc. receiving well; in-	S. J. Armstrong, Sec'y Fire & W. Bd, J. C. Derrough, Eng'r of Water Wks. W. B. Bates, City Engineer. Chas. L. Covell, Supt. Water Works. Burns & McDonnell, K.C., M., Engrs S. M. McCowell, Clerk of Council. Timothy Sexton, City Clerk.
owa	Denison	Feb. 1, 3 p.m	stalling system	
rkansas Ianitoba	Osceola Winnipeg	Feb. 1 Feb. 22, 11 a.m	2,000 ft. deep, if necessary. Constructing \$25,000 water works. Furn. and erecting turbine pump with elec. motor for w. w	M. D. Wright, Chm. Water Com. S. L. Gladish, Mayor. H. N. Ruttan, City Engineer.
			SEWERAGE	
lichigan	Grand Rapids		Furn., also furn. and erecting one 3-ton, two 4-ton and one 6-ton hand operating traveling cranes for sewage pump. stations	S. A. Freshnev, Sec'v Rd. Pub. Whe
ennsylvania Dhio ndiana Dhio tah	Salt Lake City	Jan. 7, noon Jan. 8, noon Jan. 8 Jan. 8 Jan. 8, 8 p.m	Constructing a sewers in 4 streets. Constructing a sewer. Bldg, 2 concrete arches and rein. concrete box culvert. Constructing a sewer. Bldg, sewers in Spinks St. from Stibbs to University St. Bldg, sewers in Sewer Extension No. 219. Bldg, 24-in. circular culverts in certain parts of village. Constructing a drain in Jefferson township. Constructing a sewerage system. Completing a bandoned contract of Oct. 26 for bldg, storm relief tunnel sewer. Sewer Dist. No. 33, to Harlem River near	R. L. Gorman, Clk. Bd. Pub, Wks B. E. Briggs, City Engineer. Stanley Struble. Pres. Co. Comrs. Guy Stinchfield, City Engineer. C. W. Van Nest, Clk. Bd. Pub. Serv. Louis C. Kelsey, City Engineer. Kline F. Leet, Village Clerk. J. D. Hartman, care of Hanna & Hall W. C. Crozer, City Engineer.
	Polk Danville		High Bridge; security, \$130,000 Bldg. sewers and disposal plant, State Inst. for Feeble Minded Bldg. new san. sewer system for St. Hosp. for Insane, inc. 7,500 ft. 8 to 15-in. t. c. pipe, etc.; also disposal plant, inc. conc. sed. tanks, filters, 12-in. c. i, force main and electrically-	State Dept. of Health, Harrisburg.
ntario	Coronto J	an. 15	Bldg. Sec. 3, high-level interceptor, inc. 6,385 ft. 7 1-2 to 8 1-2 ft.	Dr. H. B. Meredith, Supt. St. Hosp.
			circular sewer, manholes, etc.; bids by registered post only Constructing a sewer on 13th St	C. H. Rust, City Engineer. W. B. Bates, City Engineer.

	Georgia Kansas	East Point Herington	Jan. Feb.	19, 3:30 p.m	Constructing 12 miles of sewers; estimate, \$20,000	J. C. McKenzie, Mayor. Burns & McDonnell, Kan. City, Mo., Engineers.			
					BRIDGES				
	California	Santa Rosa	lan.	7, noon 7, 2 p.m	Grading, draining, paving, bridges, etc., County roads	F. L. Wright, County Clerk.			
	Utah West Virginia	Cincinnati Salt Lake City Elkins Wichita	Jan. Jan.	8	site. Constructing bridges and culverts for County. Bldg. steel or concrete hwy. bridge, Jordan Riv., No. Temple St. Bldg. 3 steel bridges for Randolph County Bldg. 5 steel bridges as follows: three 80 ft., cost, \$2,000 each; one over Ark. Riv., using old steel, \$9,000; 40 ft. over Chis-	John C. Daly, County Auditor. Fred. Dreihs, County Clerk. Louis C. Kelsey, City Engineer. Lee Crouch, County Clerk.			
	Ohio	Newark Minneapolis Topeka	Jan. Jan. Jan.	11, noon 11, 11 a.m 11, 5 p.m		J. N. Wright, County Auditor. Hugh R. Scott, County Auditor. C. B. Burge, City Clerk.			
	South Dakota Nebraska	Brookings	Jan. Jan.	12	with concrete floor; or concrete arch bridge Constructing all bridges ordered during 1909. Furn. mat. and bldg. all County bridges, all kinds, for year. Mat. and labor for steel bridge with draw span complete, except	Fred. N. Tynes, Co. Aud., Portsmth.			
	Indiana. Nebraska. Nebraska. Nebraska. Illinois. Illinois. Missouri.	Rensselaer Kearney York Beaver City Urbana Chicago St. Louis	Jan. Jan. Jan. Jan. Jan. Jan. Jan.	12	piers, inc. 8 spans, total length 928 ft.; cost, \$45,000. Constructing bridge over Kankakee River. Bldg. all bridges and bridge repair work during 1909. Bldg. all steel and wooden bridges in York Co. during 1909. Bldg. all steel bridges that may be ordered in 1909. Bldg. 48-ft. hwy. bridge on concrete substructure. Bldg. \$25,000 bridge in Sheridan road and I. M. Canal. Bldg. \$2,500 foot bridge over River Des Peres Forest Park.	W. A. Miller, County Clerk. Dan. K. Morgan, County Clerk. Iva O. Baker, Champaign, Eng'r. C. R. Dart, Bridge Engineer. A. J. O'Reilly, Pres. Bd. Pub. Impts.			
	Ohio	Youngstown Naperville. East Point Toledo Cincinnati Dayton.	Jan. Jan. Jan. Jan. Jan. Jan. Jan.	18, 11 a.m	Miami River; also 2 abutments and 2 piers; bidders' plans. Renewing floor of West Ave. bridge in city. Pipe sewers, inlets, manholes, etc., in various streets. Constructing 12 miles of sewers; dig. two 6 or 8-in. wells. Furn. mat. and repairing bridge, Washington township. Bldg. culvert and approaches, Sycamore township. Bldg. sub and superstructure, bridge over Miami River, in Co. Constructing 6 bridges for County.	T. J. Kauffman, County Auditor. Will B. Jones, County Auditor. P. E. Kroehler, Pres. Bd. Local Imp. J. C. McKenzie, Mayor. H. F. Van Fleet, Chm. Co. Comrs, Fred. Dreihs, Clk. County Comrs. T. J. Kauffman, County Auditor.			
					LIGHTING AND ELECTRICITY	100			
	Michigan	Detroit. Duluth Kansas City Mahnomen Albany Eugene Napa.	Jan. Jan. Jan. Jan. Jan. Jan. Jan.	7, 4 p.m. 7, 4 p.m. 7, 2 p.m. 9, 8 a.m. 11, 8 p.m.	Lighting sts., pub. places, etc., any medium, 3, 6 or 10 years Installing elec. gen. plant in light station. Furnishing cast-iron water and gas pipe. Furn. and install. four 350-h.p. boilers with oil burners. Installing an electric lighting plant. Furn. mat. and installing electric or acetylene gas system. Constructing 2,400-h.p. plant at river; cost, \$130,000. Franchise for farmers' line from Napa into Lake County.	F. T. Bowler, Sec'y Pub. Lt. Comn. Water and Light Comrs. S. J. Armstrong, Sec'y Water Bd. A. O. Vachon, Village Recorder. Thos. Tomasek, Village Recorder, F. C. Kelsey, Corbett Bldz., Portland.			
					Furn. and install. 2 cables, each 3 conductor, paper insulated cables from power house of Cataract Co. to water pump, sta Furn. are and other lights for city. Bldg. electric light plant; Burns & McDonnell, Kansas City, Mo. Furn. and erecting 100-kw. ac. generator, dir. cur.; 200 rev. per min., 25 are lamps and regulators, pole lines, switchboards, all	F. G. Ward, Com'r Public Works. Lee Stephens, Com'r of Lights. A. Ringwald, City Clerk.			
	Kentucky California Florida	Frankfort Ontario White Springs	Jan. Feb. Feb. 1	19, noon 2	instruments, etc. Furn. and install. electric light fixtures, new State Capitol. Gas franchise for light, heat, etc., for 50-year period. Bldg. \$3,000,000 power plant for Suwanee Riv. RR. & Pow. Co.	E. H. Davis, Griffin, Engineer. Edw. M. Drane, Bd. State Cap. Com. R. O. Brackenridge, Town Clerk. D. G. Ziegler & Co., Jacksonville, Fla.			
MISCELLANEOUS									
	New York New York	New York Buffalo San Bernardino	Jan. Jan. Jan 1	7, 3 p.m 7	Furn. and delivering pipe horse collars for Dept. Street Cleaning. Furn. lumber and other supplies for city parks. Remodeling old Police Hdqrs. into police station. Constructing fire station in Pennsylvania Ave. Furn 500 ft. 2 1-2-in fire hose	Henry Smith, Pres. Park Bd. F. G. Ward, Comr. Pub. Wks. Harry Allison, City Clerk.			
					\$10,000. Bldg. field house in Union Park, inc. gym., shower baths, lava- tories, lunch room, library, reading rooms, assembly hall, club	John V. Cowan, Pres. Aqueduct Com.			
	Ohio	Northfield	Jan. 1	5, 10 a.m 6, noon	rooms, etc., swimming pool, dressing rooms, etc.; cost, \$75,000 Furn. and install. boiler, blow-off tank, etc., Walters Baths, No.3 Bldg. 2-story engine house, No. 37; cost, \$20,000 Furn. 25,000 bbls. Portland cement, f. o. b. at works Erecting Town Hall, Moore Arch. & Eng. Co., Everett Bldg.,	Edward B. Preston, Insp. Bldgs. A. J. O'Reilly, Pres. Bd. Pub. Impts. U. S. Reclamation Service. M. A. Van Horn Clk. To Trust			
	British Col'bia Massachusetts Nebraska	Vancouver Boston Grand Island	Jan. 1 Jan. 2 Jan. 2	18, 4 p.m 20, noon 20, 5 ₄ p.m	Furn. and del. f. o. b. Vanc. auto hose wagon and auto truck Erecting and operating plant for incinerating city waste Furn. and del. f. o. b. Gr. Isl., combination chemical engine and	Wm. McQueen, City Clerk. Guy C. Emerson, Supt. of Streets.			
					host cart, with all accoutrements. Furn. and del. 2,500 bbls. Portland cement in cloth by carload. Bldg. No. 47 engine house and heating plant; \$20,000. Bldg. entrance and public comfort station, \$16,000. Erecting Court House and jail for Rogers County.	T. P. CHITOTO CHYCLIETE			
STDEET IMPROVEMENTS on \$15,000 bond issue for street improve- ster street, Grovers avenue, Frank street,									

STREET IMPROVEMENTS

STREET IMPROVEMENTS

Anniston, Ala.—Council has advertised bids for construction of boulevard from Edgemont Cemetery to southern limits of city; boulevard to be 60 feet wide, 30 feet of which will be macadamized at once.—Thos. E. Kilby, Mayor.

Mobile, Ala.—Wright Smith, Engineer, Mobile, has prepared plans and specifications for pavement and drainage of two of main residential streets; cost, \$140,000; also plans for a small asphalt plant to cost about \$3,500.—J. J. McMahon, Secretary Board of Public Works.

Montgomery, Ala.—Mayor W. M. Teague has been authorized by Council to have made plans, grade profile and estimates for granite curbs and surface and storm water sewer on Clayton, between Holt and Clark streets.

Bisbee, Ariz.—Council has passed an ordinance authorizing the issue of \$125,000 bonds for street improvement, recently voted.—C. W. Hicks, City Clerk; G. H. Neale, Mayor.

San Mateo, Cal.—The City Trustees are urging the laying of better sidewalks.

Watts, Cal.—Council will expend \$50,000 for street impovements.

Manatee, Fla.—City will vote January 21

on \$15,000 bond issue for street improve-

on \$15,000 bond issue for street improvements.

Bridgeport, Conn.—Council Committee on Streets and Sidewalks has asked for the following appropriations: First District: Street grading, \$5,000; State highway construction, \$3,000; North Main street, macadam, \$5,000; Second District: Street grading, \$6,000; street grading, special, Madison avenue, \$4,000; street grading, special, William street, \$1,000; trees, removal of, \$1,500; sidewalks, curb and gutter, grading, \$3,000; crosswalks, new, \$5,000; land damages, general, \$2,000; setting back curb, etc., where permanent pavement is to be laid, \$5,000; Lindley street crossing at North avenue, reappropriation, \$1,000; also for permanent pavements: Golden Hill street, \$4,000; Main street, East Washington avenue to Gilbert street, \$31,000; Main street, Atlantic street to park, \$8,400; East Housatonic avenue, block pavement, \$10,850; Island Brook avenue bridge, \$5,000; street sprinkling, new streets, \$5,865.12; street, Center street, Howard avenue, Carroll avenue, Randall avenue, Bell street, Catherine street, Brew-

ster street, Grovers avenue, Frank street, Madison avenue, Berkshire avenue, French street, Hollister avenue, Fourth street, North Railroad avenue, State street extersion, Lexington avenue, Shelton street, Iranistan avenue, Spring street, Ogden street, Baldwin street, Mead street, Lenox avenue, Reilly street entire length, Glenwood avenue, Linwood avenue, Admiral street entire length, and DeForest avenue. Miami, Fla.—Dade County Commissioners are receiving bids for construction of rock road between West Palm Beach and Stuart, distance 40 miles.

Pensacola, Fla.—The Committee on Public Ways and Parks has recommended the construction of a permanent sidewalk on Saville Square; cost, \$300; completing grading and hardening of Palafax street; cost, \$250; and grading H street; cost, \$400.

Sarasota, Fla.—Citizens have voted \$25,000 bond issue for street improvements.

Titusville, Fla.—Brevard County has decided not to issue bonds for road improvements.

Atlanta, Ga.—City is considering con-

ments.

Atlanta, Ga.—City is considering construction of road from this city to College Park; distance six miles.

Jackson, Ga.—Citizens will vote January 11 on the question of issuing \$10,000 in bonds for road work in Butts County.

Macon, Ga.—Alderman Wheeler has offered a resolution that the Finance Committee appropriate the sum of \$10,000 and such additional sum as the Committee deemed the condition of the city would warrant for paving, said paving to be begun at once and on such streets as may be designated by the Mayor and Council.

Macon, Ga.—Council has received petitions for the paving of Cotton and Washington avenues with brick; cost, \$10,000.
Savannah, Ga.—Street and Lanes Committee has recommended that City Council include an item for \$65,689.42 in 1909 budget for paving about five miles of streets with asphalt block and vitrified brick, and two small stretches in West Side with granite block; total cost, \$184,019.70.

Wallace, Ida.—City is considering the paving of Fifth, Sixth, Seventh, Eighth, Bank, Cedar, Pine and Hotel streets.

Aurora, III.—Council has received petitions for the paving of South avenue with asphalt, and Galena, River and Walnut streets with brick.

Chicago. III.—The connecting-link ordinance, making LaSalle street a boulevard from Jackson boulevard to the river and Washington street from Canal to LaSalle street, was referred by Alderman Coughlin to the Committee on Streets and Alleys South; a similar measure for a strip of Washington street on the west side will be presented by Alderman Brennan.

Peorla, III.—Council is considering the widening of South Washington street. Vincennes, Ind.—The Board of Works has secured a petition for the improvement of Sixth street, from Hickman to St. Clair streets.

New Albany, Ind.—The New Albany Board of Public Works has adopted a reso-

New Albany, Ind.—The New Albany Board of Public Works has adopted a reso-lution for the vitrified brick improvement of Locust street from Charles to Beeler, and directed City Engineer S. T. Mann to prepare the plans and specifications for the improvement

Davenport, la.—Council has adopted reso

Davenport, Ia.—Council has adopted resolutions for the excavating, curbing and paving of Thirteenth, Rock Island, Ninth, Le Claire, Seventh, Warren, Lombard, Mitchell, High, Ripley and Locust streets.—Hugh Mueller, City Clerk.

Ft. Madison, Ia.—The Iowa Engineering Company, Consulting Engineers, Clinton, will prepare a complete system of street and sidewalk grades; a large number of macadam and cement walks will be laid during 1909.

macadam and cement walks will be laid during 1909.

lowa City, la.—Council has passed a resolution providing for the paving of several streets at a cost of \$140,000.

Coffeyville, Kan.—Bids will be received after January 1 for nine blocks of two-course brick paving, plans for which are being prepared by F. W. Yale, City Engineer.—Rosa Bell. City Clerk.

Hutchinson, Kan.—Council has ordered the paving of Washington street from C avenue to the Santa Fe right-of-way; Washington street from Poplar street to Second avenue, and Walnut street and First avenue.

avenue.
Salina, Kan.—Council has sold R. W. Morrison & Co., of Kansas City, \$52,800 worth of paving bonds, and is considering the paving of East Iron avenue and Eighth

Topeka, Kan.—Council is considering the paving of Tenth street between Kansas avenue and Jackson.

New Orleans, La.—The Motor League of

New Orleans, La.—The Motor League of Louislana is considering the extension of Gentilly avenue to Chef Mentaur; distance. Is miles; city has appropriated \$2,000 to build small portion of road as trial and to furnish estimate of total amount needed; city Engineer W. J. Hardee will do the work; Motor League will select Civil Engineer to direct and supervise building of its portion of roadway.

Detroit, Mich.—Council has been petitioned for an appropriation of \$15,000 for the construction of a municipal plant for the manufacture of creosote paving blocks.

Grand Rapids, Mich.—The Board of Public Works has been requested to furnish Council with estimates for grading and graveling North Lafayette, A and B streets; also Dickinson, Horton, Terrace and Fifth avenues.—J. L. Boer, City Clerk.

Menominee, Mich.—The Board of Public Works has decided to pave Pierce avenue with brick.

Hastings, Neb.—Property owners have cettilioned for sewers in West Sixth and

Hastings, Neb.—Property owners have petitioned for sewers in West Sixth and Seventh streets; cost, 60 cents per foot frontage.

Lincoln, Neb.—Wm. Grant, City Engineer, has recommended the erection of a municipal asphalt repair plant.

Long Branch, N. J.—City has invited bids for cleaning the asphalt streets for two years; present contract expired January 1.

Newark, N. J.—Request will be made to the Board of Freeholders by the Road Committee to enter into negotiations for the repaying of Bloomfield and Freling-

huysen avenues with sand stone.—County

huysen avenues with sand stone.—County Engineer Owen.

New Brunswick, N. J.—The Middlesex County Board of Freeholders has decided to macadamize the road between Monmouth Junction and Kingston, also the road between Kingston and the aqueduct.

Plainfield, N. J.—The Middlesex Board of Freeholders has decided to macadamize the road between Monmouth Junction and Dayton and the aqueduct near Carnegie Lake at Princeton; work will be commenced in the spring; cost, \$30,000; this will give a continuous stone road from New Brunswick to Trenton, 26 miles long; the Freeholders have also decided to issue \$125,000 of road bonds to pay for the roads to be improved.

Brooklyn, N. Y.—The Brooklyn League and other influential civic organizations are urging the extension of the Eastern Parkway from Linwood Terrace to the borough line.—Gilbert Elliott, 44 Court street. Chairman of the Brooklyn League's Committee on Parks and the City Plan.

Poughkeepsie, N. Y.—City is considering the repaving of portions of Market and Union streets.

Rochester, N. Y.—The State Good Roads Committee has recommended the improvement of the Churchville-Rega road.

Statesville, N. C.—Iredell County Commissioners have selected C. M. Miller. Civil Engineer, Salisbury. to recommend route for extension of Turnersburg macadam road.

Grand Forks, N. D.—Bids will probably be

Grand Forks, N. D.—Bids will probably be called for in May for \$200,000 worth of paving; bids for the bonds will be received in April; tar macadam will be used.—Engineer, J. J. Smith of Crand Bonds.

ing; bids for the bonds will be received in April; tar macadam will be used.—Engineer, J. J. Smith, of Grand Forks; W. H. Alexander, County Auditor.

Minot, N. D.—Council will receive a petition for the paving of several blocks on Main and First streets.—E. S. Severance. City Engineer.

Akron, O.—The County Commissioners will macadamize the Copley road during the coming spring; cost, \$12.683.

Akron, O.—Council has ordered the relaying with stone of the present pavements on Mill street from Howard to Summit streets and on Market street from Canal to High streets.

Cincinnati, O.—Council has directed City Engineer J. H. Sundmaker to prepare estimates for grading Tacoma and Rice streets and Fisher and Emporia avenues; also the improvement of Jail street with granite; Oehler street from Louise street with asphalt, and Oehler street from Freeman avenue with wood blocks; Engineer Sundmaker has estimated the improvement of Burns street at \$15,956.45.

Cincinnati, O.— The North Cincinnati Business Men's Club is urging the immediate improvement of the Carthage pike

treet at \$15,956.45.
Cincinnati, O. — The North Cincinnati Business Men's Club is urging the immeliate improvement of the Carthage pike.
Cleveland, O.—Council has received ordinances establishing grade on twelve streets and sidewalks on seventeen streets:—Peter Vitt, City Clerk.
Cleveland, O.—The Nickel Plate Railroad III expend \$1,300,000 in eliminating grade rossings in the East End and \$250,000 will e spent on the West Twenty-fifth street rossings: City will pay \$125,000 of the utter amount.

spent on the viscossings; City will pay \$125,000 cossings; City will pay \$125,000 cossings; City will pay \$125,000 con 25,000 bond issue for paving street interactions.—H. H. Sayre, City Engineer.

Bartlesville, Okla.—Bids will soon be recived for 30,000 square yards of rock ashalt paving and 4,000 square yards of rick paving; plans have been prepared by V. J. Aspinwall, City Engineer.—F. B. brick paving; plans W. J. Aspinwall, Harnett, City Cler

W. J. Aspinwall, City English.

Oklahoma City, Okla.—Council has passed resolutions for the grading of thirteen streets and the paving of fifteen streets.—George Hess. City Clerk.

Sapulpa, Okla.—City will expend \$24,000 in asphalt paving. City Englineer E. D. Kirkpatrick is preparing plans.—S. N. Hurd, City Clerk.

Hurd, City Clerk.
Tulsa, Okla.—Bids will be received about
January 15 for 30 blocks of brick and asphalt paving.—E. B. Cline, City Clerk; F.
C. Hughes, City Engineer.
Harrisburg, Pa.—City Engineer Cowden
has estimated the cost of widening Front
street from Reily to Denison street at \$40.000.

Scranton, Pa.-Council will pass another scranton, Pa.—Council will pass another ordinance and new bids will be received for the paving of a section of West Market street from North Main avenue to Church street; old ordinance did not agree with contract.

Wilkes-Barre, Pa.-City is considering t awarding of a ten-year contract for the repair of asphalt streets.

Newport, R. I.—The Board of Aldermen is considering the Washington street boulevard matter.

North Smithfield, R. I.—The North Smithfield Town Council has voted to relay the Greenville Road from its northern extremity until it merges with present highway.

Columbia, S. C.—Council has appropriated \$21,000 for streets and \$81,700 for paving Main street.

Grand Forks, S. D.—City Engineer J. J. Smith has been ordered to prepare plans and specifications for paving portions of North Fourth, North Fifth, Third, South Sixth and Fifth streets, International, Fourth, Reeves, Belmont and Eighth avenues.

nues.

Dallas, Tex.—Citizens of Deere Park are urging the paving of Haskell and Carroll avenue.—Geo. Parkhouse, G. K. Butcher, M. M. Christman and W. G. O'Connell,

M. M. Christman and W. G. O'Connett, Committee.

Dallas, Tex.—J. B. Winslett, City Secre-tary, will probably advertise for bids for paving of Jackson street with either bitu-lithic or bituminous paving and of Annex

Ithic or bituminous paving and of Annex avenue.

Dallas, Tex.—The City Secretary has been instructed to call for bids for the excavating and grading of Columbus avenue from Carroll to Fitzhugh; bids will also be advertised for the third time for the improvement of Jackson street between Harwood and the Santa Fe Railroad.

Temple, Tex.—Steps are being taken looking to an amendment to the Charter to be asked of the next Legislature to facilitate the inauguration under a bond issue of street paving.

Lynchburg, Va.—Plans are being prepared by H. L. Shaner, City Engineer, for widening Tenth street 10 feet; \$3,000 has been appropriated; new portion will be paved.

Norfolk, Va.—The Public Improvement

paved. Norfolk, Va.—The Public Improvement Committee of the Councils has approved resolution providing for paving Omohundro avenue and extension and paving of Twelfth street; cost, \$86,880.50.—W. T. Brooke, City

Engineer.

Norfolk, Va.—Under resolution of the Berkley Ward Improvement Committee, the Board of Control has authorized the street department to purchase 10,000 bushels of oyster shells for use in temporary improvement of certain dirt streets in Berkley ward.

ward.

Bremerton, Wash.—City is considering the paving of the business streets in the

spring.

Montesano, Wash.—City has ordered the paving of Main street with macadam or as-

phalt. Olympia, Wash.—Portions of Washington, Franklin and Sixth streets will be paved, and Adams, Seventh and Jefferson streets will be graded; probable cost, \$96,209. Olympia, Wash.—The State Highway Commission has rejected all bids for improving the State Aid road No. 27 in King County.

cuyallup, Wash.—City is considering the ling of a bond election for more and bet-

Puyallup, Wash.—City is considering the calling of a bond election for more and better paved streets.

Seattle, Wash.—Council has passed ordinances for street improvements as follows: Sixth avenue and other streets, brick paving, etc., \$133,000; Third avenue and other streets, asphalt paving, \$33,000; Sixth avenue, West, cement walks, \$5,500; Summit avenue and other streets, asphalt paving, \$74,000; Market street and other streets, planking, \$7,800; Thirty-first avenue. south, grading, \$6,000.—R. H. Thomson, City Engineer.

planking, \$7,800; Thirty-first avenue, south, grading, \$56,000.—R. H. Thomson, City Engineer.

Seattle, Wash.—Council has received a petition asking for the grading and regrading of Yesler way and other streets; cost, about \$390,000; action will be taken shortly and bids invited.—R. H. Thomson, City Engineer.

Spokane, Wash.—Plans have been prepared by the City Engineer's office for the construction of a sidewalk on Sprague avenue, from Hillyard street to the west end of the Sprague avenue trestle, covering an area of 728,481 square feet; estimated cost, \$6,500; the Board of Public Works has submitted plans and specifications for the paving, with asphalt, of Sixth avenue, from Stevens street to Bernard street; estimated cost, \$11,000; also, plans and specifications for grading, curbing and sidewalking Lee street from Boone avenue to Colorado avenue, an area of 404,376 square feet; estimated cost, \$6,600; Perry street, cost, \$4,350; Fifteenth avenue, cost, \$6,500; Lower Crossing and Fall avenues, cost, \$3,700, and Spoford avenue. cost, \$3,600.

Tacoma, Wash.—Council has received petitions for grading the south half of Fortysixth and Forty-eighth and South G streets.

Janesville, Wis.—Council has adopted a resolution providing for paving a portion of South Main street with brick.

BIDS RECEIVED AND CON-TRACTS AWARDED

Gadsden, Ala.—C. O. Duncan has the contract for constructing cement sidewalks around Court House Park.
Little Rock, Ark.—The Chicago Rock Island & Pacific Railroad Company has awarded the contract for paving with brick the approaches to the East Second street

viaduct to I. P. Shelby, of Little Rock, for

viaduct to I. P. Shelby, of Little Rock, for \$5,000.

Los Angeles, Cal.—For furnishing concrete mixers under Specifications No. 74-B, contract for Item 1 has been awarded to Municipal Engineering and Contracting Company for two No. 6 Chicago cube mixers, with charging elevator unity equipped, at \$1,918 f.o.b. Los Angeles, Cal.; immediate shipment from factory, Chicago, Ill.; shipping weight, Il,200 pounds, and Item 2 to Fairbanks, Morse & Co.: Two concrete mixers, each to be of 20-yard capacity per hour at \$2,970, f.o.b. Los Angeles; delivery within 4 to 10 days; shipping weight, 12,000 pounds; two Ransom pivot charging hoppers at \$270 each, f.o.b. Los Angeles, Cal.—delivery within 4 to 10 days; total amount of contract, \$2,610.

Sacramento, Cal.—The Board of Supervisors on Dec. 8 opened bids as follows for paving with aphaltum and macadam the Twelfth street trestle, a distance of one-half mile: Clark & Henery, Stockton, Cal., \$2,96; Western Bridge & Construction Co., \$10,703.—G. N. Randle is City Engineer.

Co., \$10,703.—G. N. Randie is City Engineer.

Hartford, Conn.—J. H. MacDonald, State Highway Commissioner, has awarded the contract for the construction of 3,750 linear feet of gravel road, including two 15-inch and one 30-inch tile culverts, on the Niantic and Lyme Turnpike, in the town of East Lyme, to the Bennett N. Beard Company, Shelton, Conn., at \$2.10 per linear foot. Other bidders were: Donahoe Bros. Middletown, \$3.97; Lane Construction Corporation, Meriden, \$2.95; A. Vito, Thompson, \$3.27; Anderson & O'Nell, Chatham, \$2.25; Ahern Bros., Putnam, \$3.47; Grane & Redden, New London, \$2.20; T. H. Gill Company, Winter Hill Station, Boston, Mass., \$3.70.

Redden, New Company Winter Hill Station, Mass., \$3.70.

Pensacola, Fla.—For constructing a road of Goulding cinders on Palatox street, from De Soto to Jordan street, contract price, \$3,426. L. E. Thornton, City Engineer. The C. H. Turner Construction Company, Pensacola, was the only bidder.

De Soto to Jordan street, contract price, \$3,426. L. E. Thornton, City Engineer. The C. H. Turner Construction Company, Pensacola, was the only bidder.

Lewiston, Ida.—Council has let a contract for paving Lewiston's business streets to the Warren-Kain Company, but the contract covers only the grading and paving, and not the curbing, gutters and subsurface drainage; the partial contract is approximately \$133,000. Councilman William Bollinger succeeded in blocking the award on the ground that F. A. Dole had underbid the Warren-Kain Company \$4,900 on this portion of the contract, and Dole was later given this portion at \$18,000; bitulithic will be used in paving 50,000 square yards. For 18 months the Council has been discussing the paving question, and several times bids have been rejected and another start taken; work will begin at once and be completed by August.—Mayor Heitfeldt.

Pekin, Ill.—Chairman Schaefer, of the Street and Alley Committee, submitted a report recommending that the contract for raising and widening the grade be let to Huffman & Concannon; there were three bids, as follows: Grover C. Helm, \$2,472; Jacobs & Porter, of Mackinaw, \$2,400, and Huffman & Concannon, \$2,153.48; the contract was awarded to the lowest bidders and the work is to be finished within four mished by the City Engineer.

Peoria, Ill.—The contract for rebuilding the wagon road across the river has been signed by Huffman & Concannon and representatives of the city; the contract calls for the widening of the west bluff grade from 11 feet to 25 feet on top; the firm expects to do the work with their dredge now at work in the LaMarsh drainage district, but the water in the ditch that parallels the road is low and the dredge may have trouble navigating it. In addition to that, the low water will make it difficult to reach the top of the grade with a boom of the length used on the dredge.

Muncie, Ind.—The Board of County Commissioners has awarded the contract for grading and graveling the Shrover Road, to A. Manor, of Redkey, at \$

Princeton, Ind.—A. T. Eigemann, Rock-port, Ind., has the contract, at \$37,000, for eight miles of rock road for Gibson County. Menominee, Mich.—Crawford & Sons have been awarded the contract for opening the new county road from Stephenson to Cedar River.

Vicksburg, Miss.—City has awarded contract to the Southern Paving and Construction Company, Chattanooga, Tenn., for

street cement walks, Henry Schoenfeldt, \$70.50.

The contract for asphalting 1,000 square yards in front of Convention Hall was let to Rochester Vulcanite Pavement Company for \$2,004.

Canton, O.—The Board of Public Service, through Clerk Zellers, City Engineer Starrett and Assistant Charles Frey, on December 25. received the following bids for street improvements.

West Fifth street paving, from Newton to Brown avenue: Turnbull & Son. Wise, Wise & Smith; F. A. Downs, Harry Corl, H. P. Hahn and P. Campbell.

Rex street paving, from Fourth to North street; Turnbull & Son, Wise, & Smith: F. A. Downs, L. D. Burd, Harry Corl, H. P. Hahn.

West South street paving, from High street to Dueper avenue: Turnbull & Son; Wise, Wise & Smith; F. A. Downs; John Dine; Harry Corl; George Herring & Sons; H. P. Hahn; J. C. Devine; P. Campbell; H. D. & W. N. Wright, W. S. Pace. Rappe street improvement, Shorb to Fulton street: Wise, Wise & Smith, F. A. Downs, Miller & Berger, Harry Corl and H. P. Hahn.

Cedar street improvement, from Marion to Harrison avenue—Turnbull and Son, Wise and Smith, F. A. Downs, Miller and

to Harrison avenue—Turnbull and Son, Wise and Smith, F. A. Downs, Miller and Berger, Harry Corl, H. P. Hahn, Nelson and Pederson.

Berger, Harry Corl, H. P. Hahn, Nelson and Pederson.

Cleveland, O.—The Board of Public Service awareded on Dec. 24 contracts for paving about 5 1-5 miles of streets throughout Cleveland to Rochl Bros., Northern Ohio Paving & Constr. Co., Arcade Bildg.; Cleveland win Bros. & Graham, Rose Bildg.; Cleveland Trinidad Paving Co., 420 Lakeside avenue, and M. E. Kavanaugh, for a total of \$129,350.

8129,250.

Bartlesville, Okla.—Contract has been awarded R. S. Gilman, of Iola, Kan., to pave throughout Bartlesville, at a cost of \$40,000.

Guthrie, Okla.—City Council has awarded to the Chicago Asphalt and Rubber Company the contract for 102,851 syuare yards of asphalt paving and 98,294 square yards of brick paving.

aspnart paving and 98,294 square yards of brick paving.

Beaver Falls, Pa.—Contract for paving about 3,000 square yards on Sixth street has been awarded to J. G. McGuire & Co., or New Brighton, for \$4,408; standard paving block will be used.—Carl S. Donaldson, Borough Engineer.

Clearfield Ra.—Rood & Patton Courses.

New Brighton, for \$4,408; standard paving block will be used.—Carl S. Donaldson, Borough Engineer.

Clearfield, Pa.—Rood & Patton, Curwensville, Pa., has been awarded the contract for constructing the state road from the Curwensville Borough line to Burlington, and from Curwensville Borough line to Burlington, and from Curwensville Borough line through the borough, at about \$21,783.

Philadelphia, Pa.—For making repairs to country roads in 1909, two bids lower than that of Contractor Edwin H. Vare have been received by the Director of Public Works. Vare bid \$75,000, which is \$25,000 less than he is being paid upon the same contract for the current year, but he explained in a letter that the reduction is due to assistance given by the Bureau of Highways. His bid, however, was underbid by David McMahon, who offered to do all the work for \$69,000, while Cunningham and Murray bid \$72,000.

Pittsburg, Pa.—Frank Bryan, of McKees Rocks, has secured the contarct for improving Troy Hill extension No. 2 road, a distance of two-thirds of a mile.—Geo. T. Barnsley, Chief Road Engineer.

Pittsburg, Pa.—Contracts have been awarded for street work as follows: 33,300 square yards block stone, 6-inch to 7-inch thick, gravel foundation 9 inches thick, 1 inch sand, \$2,127; contract includes 56,300 cubic yards excavation, at \$.656; 37,500 square yards excavation, at \$.656, 17,300 square yards brick pavement, 2 inches thick, on 1:3:6 concrete foundation 6 inches thick, on 1:3:6 concrete foundation 6 inches thick, on 1:3:6 concrete foundation 6 inches thick, on 1:3:6 concrete foundation at \$.656, 17,300 square yards brick pavement, 4 inches thick, 0 1:3:6 concrete foundation 6 inches thick, 1 inch sand cushion, \$1.554; contract includes 38,900 cubic yards excavation at \$.673. For 45,000 linear feet sandstone curbing the price was 77 cents per linear foot. The Wadsworth Stone and Paving Company received contract for 107,-000 square yards sidewalks, 1:3:6, 3-inch and 1:2. 1-inch on 6-inch cinder or broken stone, for \$1.58 per square ya

stone, for \$1.58 per square yard.—H. S. Sprague, Superintendent Bureau of Construction.

The Board of Commissioners of Allegheny County, F. P. Booth, Controller, let contract to Frank Bryan, at \$17,198.18, for the extension of the Troy Hill road.

Scranton, Pa.—Bids for practically all the paving and sewer work that is to be done by the city during the coming summer were opened recently; the value of the contracts that the city will award for paving will reach a total of nearly \$125,000. All of the paving bids for asphalt work were presented by three bidders excepting in one instance, Sixth avenue from West Lackawanna to West Linden street and in this matter but one bid was presented and it was above the estimated cost so it will likely be rejected; R. C. Ruthven, of Dunkirk, N. Y. will probably be awarded all the other contracts.

For the paving of Green Ridge street, with asphalt between Dickson avenue and the Green Ridge street bridge, the McDonald Construction company bid \$2.14 a square yard, R. C. Ruthven, \$2.15, and the Barber Asphalt Company, \$2.23, including the curb; Mr. Ruthven's bid is probably low.

For the paving with asphalt of Green Ridge street between North Main avenue and the bridge, the McDonald Company bid \$2.14, Ruthven, \$2.15, and the Barber Company, \$2.40.

For paving with asphalt of Green Ridge street, between North Washington avenue and Dickson avenue, Ruthven bid \$2.15, the McDonald Company, \$2.48.

For paving with asphalt of Quincy avenue between Railroad and Fourth avenues, Ruthven bid \$2.20, the Barber company, \$2.33, and the McDonald company, \$2.35.
For paving with asphalt of Quincy avenue, from Myrtle to Popular street, Ruthven bid \$2.15, the McDonald company, \$2.25, and the Barber Company, \$2.53.
For paving with asphalt of Webster avenue, from Pine to Ash street, the McDonald company bid \$2.14, Ruthven \$2.15 and the Barber Company, \$2.27; including the curb Mr. Ruthven's bid is probably low.
Mr. Ruthven's bid is probably low.
Mr. Ruthven bid \$2.75 for paving with asphalt of Sixth avenue from West Lackawanna avenue to West Linden street.
For paving with brick a short section of North Main avenue, Dale & Gaynor were the only bidders.

Chattanooga, Tenn.—The Southern Paving & Construction Co., First National Bank Bldg., is low bidder for paving 13th street, formerly Hooke street; length about 1325 feet; West Construction Co., 1001-1007 Market street, Chattanooga, is low bidder at about \$40,000 for paving Broad street between 4th and 9th streets, not now paved, with asphalt and resurfacing balance with asphalt; vitrified brick will be used in gutters and between street-car tracks; city has option of specifying granite or other curbing; length to be paved is about 2300 feet.
H. F. Van Dusen, Chairman Board of Public Works. ope.
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lic Works.

The Board of Park Commissioners have let contract to the Chamberlin-Freeman Construction Company, at 45 cents per linear foot, for laying 800 feet combination curb and gutter around Boynton Park.—S. B. Cook. Chairman.

Ft. Worth, Tex.—Frank Lanham has the contract for paving with bitulithic Hemphill street, about 500 feet.—Dr. A. O. Crenshaw, Chairman.

Houston, Tex.—The contract for placing

Chairman.

Houston, Tex.—The contract for placing concrete curbing along San Jacinto street, from McKinney to Leeland street, was awarded on Dec. 16 to McAshan & Williams. There are approximately 2,800 lin. ft. of surbing to be placed, this including some already existing brick curbing, which has been declared available when the street paving begins.

some already existing brick curbing, which has been declared available when the street paving begins.

Newport News, Va.—Amount of contracts for street improvements, recently awarded: 8.829 square yards of macadam, at \$1.36 per square yards of macadam, at \$1.36 per square yards of witrified brick, Peebles block on sand base, at \$1.86 per square yards of vitrified brick, Peebles block on sand base, at \$1.86 per square yard, to J. W. Davis of Newport News; 4.518 square yards of asphalt block on sand base, at \$1.80 per square yard, to Washington Asphalt Block & Tile Co., South Capitol and R streets, Washington, D. C.; 46,053 linear feet combined concrete curb and gutter, at 43 cents per linear foot, to Alsop & Pierce. First National Bank Bldg., Newport News; concrete curb and gutter will be laid in sections of seven feet.—T. E. Pearce, City Engineer.

Anacortes, Wash.—W. S. Stevens was granted the contract for the improvement of the Furber road at \$5.50 per lineal foot.

Everett, Wash.—Blds were opened by the Board of Public Works recently for the improvement of East Hewitt avenue from State street to the Great Northern railway, L. I. D. 190; for the improvement of Pince the districts were awarded to J. B. Snyder, the lowest bidder, whose bids were as follows: L. I. D. 192, Pinc street, \$5,923.19; L. I. D. 190, Hewitt avenue, \$2,223.42. Fraser & Westover were the lowest bidders on the contract for L. I. D. 194. The latter's bid was \$2,671 and this firm was given the contract.

Seattle, Wash.—Contract for grading Arch avenue et al. was let to McQuaid & Moore for \$4.128.80

Seattle, Wash.—Contract for grading Arch avenue et al. was let to McQuaid & Moore for \$4,128.80.

avenue et al. was let to McQuaid & Moore for \$4,128.80.

Spokane, Wash.—Julia V. Costello has secured the contract to grade and construct sidewalks on a portion of Prospect avenue at a cost of about \$11,000.

The following is a list of bids opened by the Board of Public Works on street improvements and sewer construction, and the names of the successful bidders upon the same: Paving with asphalt Stevens street, from Front avenue to the south end of the Stevens street bridge: Engineer's estimate, \$4.181; the Barber Asphalt Paving Co., \$3.790. maintenance of same 10 years, \$379; Independent Asphalt Paving Co., \$3.600.75 (awarded contract), maintenance 10 years, \$361 (awarded contract); the Western Asphalt Paving Co., \$3.647, maintenance 10 years, \$364.70.

Superior, Wis.—The following bids were received December 17 by the Pavil of Paving Co.

years. \$364.70.
Superior, Wis.—The following bids were received December 17 by the Board of Public Works for grading and bridging East Second street: Swan Holmquist, \$7,516; Peterson & Holm, \$10,040, and Lang & Skamser, \$8,728.
Sarnia, Ont., Can.—Frank Guthridge, at about \$27,000, has contract for paving Front street with creosoted wood block.

SEWERAGE

Birmingham, Ala.—Plans have been prepared by City Engineer Murray Nicholson for two brick, terra-cotta pipe and metal sewers; cost, \$1,500 and \$15,000, respectively.—Geo. B. Ward, Mayor; H. E. Shropshire, City Clerk.

Oakland, Cal.—Mayor Denison is urging the expenditure of the \$49,000 remaining in the outfall sewer fund for the construction of a septic tank.

Ocean Park, Cal.—The City Trustees are

Ocean Park, Cal.—The City Trustees are considering the improvement of the sewer

San Francisco, Cal.—The Board of Super-

San Francisco, Cal.—The Board of Supervisors has ordered the construction of a sewer in Amazon street from Loudon to Athens; cost, \$25,000; also a sewer in Hampshire street; cost, \$4,000.

San Francisco, Cal.—The Board of Public Works has petitioned the Board of Supervisors for an appropriation of \$140,000 for the construction of the southerly section of the East Potrero intercepting sewer.

San Pedro, Cal.—City Engineer Whitman has presented specifications for sewers in the district west of Palos Verdes and north of First street.

Bridgeport, Conn.—As soon as an estimate

has presented specifications for sewers in the district west of Palos Verdes and north of First street.

Bridgeport, Conn.—As soon as an estimate is obtained from the City Engineer on the cost of constructing a storm water sewer in Iranistan avenue from State street to Cedar Creek Council will ask the following appropriations: Brothwell street, \$1,775; Fox street, \$2,300; extension of State street outlet, \$500; Pequonnock street, \$1,400; North avenue, relaying, \$2,240; Charles street, \$5,000; Hanover street, \$440; Madison avenue, \$2,000; Chapel street, purchase, \$1,400; Brewster street, \$7,000; Fairfield avenue outlet, \$200; Connecticut avenue outlet, \$2,200; Connecticut avenue outlet, \$2,200; Connecticut avenue outlet, \$2,200; Congress street outlet at bridge, \$4,000; Calderwood place, \$575; Noble avenue, \$500; Fourth street, Stratford avenue northerly, purchase, \$500; Iranistan avenue, State street to Cedar creek, storm water sewer; Committee will also ask for the following specials: Wilmot avenue trunk sewer, \$10,000; Seaview avenue trunk sewer, \$10,000; Seaview avenue trunk sewer, \$10,000; Wilmot avenue trunk sewer, \$9,000; construction of sewer wells, \$4,000; Fairfield avenue, ordered and in course of construction, \$20,000; Charles street, ordered, \$5,000; Calderwood place, ordered, \$575.

Clearwater, Fla.—Bids on furnishing material or on construction of sewer system and the state of the several system and water works.

Sarasota, Fla.—Citizens are considering the construction of a sewerage system and water works.

Sarasota, Fia.—Plans have been completed for laying a large mean of the Eighth, most of the Seventh Wards; estimated cost, \$2.000.000.

in the Eighth, most of the Sixth and a part of the Seventh Wards; estimated cost, about \$300,000.

Silvis, III.—Plans have been completed for stand pipes, about three miles of water mains and four miles of sewers; cost, \$35,000.—H. G. Paddock, Moline, Engineer.

Angola, Ind.—Nothing has been done on the construction of the proposed sewerage system; cost about \$88,000. Engineer R. L. Sackett, Lafayette.

Columbia City, Ind.—City is having plans prepared for the construction of sewers in the northwest part of the city; vitrified sewer tile, 1,800 feet long, 12 inches diameter, will be needed.

Independence, Kan.—Bids will be received early in the spring for 15,000 feet of 8-inch lateral sewers; also for a septic tank and filters for the West Side Sewer.—J. D. Kramer, City Clerk; A. D. Stivers, City Engineer.

Leavenworth, Kan.—Plans are being prepared for the construction of sewers in District No. 9, to include 800 feet of 10 and 15-inch pipe.—J. H. Kirmeyer, City Clerk; A. Maduska, Engineer.

Salem, Kan.—Council has sold R. W. Morrison & Co., of Kansas City, \$6,000 worth of sewer bonds.

Sterling, Kan.—Engineers McLane & Myers, of Hutchinson, will do preliminary work for the proposed sewerage system.—H. R. Ross, Chairman Sewer Commission.

Wichita, Kan.—Plans are being prepared by B. C. Wells, Engineer, for the construction of a vitrified pipe main sewer; estimated cost, \$50,000.

Franklin, Ky.—Granberry Jackson, of Nashville, Tenn., has been selected to pre-pare plans for the proposed sewerage sys-tem; bids have not yet been called for con-struction.

pare plans for the proposed sewerage system; bids have not yet been called for construction.

Asbury Park, N. J.—Council has decided to issue \$35,000 bonds for a septic sewer plant, in compiliance with the directions of the State Board of Health.

Fulton, N. Y.—The State Department of Health has notified the local authorities that the plans of the disposal plant for the West Side sewer system have been approved and accepted by the State Board of Health.

Lowell, Mass.—City Engineer George Bowes has forwarded additional plans which are being considered by the State Board of Health for the drainage of Wigginsville and South Lowell; one calls for the construction of a sewer along the river from Belleview to Lawrence and South Whipple streets, cost \$34,000; second plan calls for the construction of a main sewer as before in Belleview and Lawrence streets, as far as the Lawrence street bridge, then turning north to the present sewer in Rogers street, estimated cost, \$31,300; third plan calls for the conveying of ail the sewage from the higher levels of district in question to a filtration area near the east bank of the Concord River; total cost, \$18,800; plan No. I is favored.

Lowell, Mass.—The State Board of Health

Concord River; total cost, \$18.800; plan No. 1 is favored.

Lowell, Mass.—The State Board of Health is considering plans and estimates for disposing of sewage of Wigginville and South Lowell; most practical plan seems to be to discharge it into the main sewerage system of this city at the corner of Lawrence and South Whipple streets; main sewer will pass under Concord River in the form of an inverted siphon; a settling tank will be placed at the southern end of the siphon.

Hastings, Mich.—Council has passed a

the form of an interest the southern end of the siphon.

Hastings, Mich.—Council has passed a resolution for the construction of sewers in Green, Anover and Marshall streets.—James M. Patten, Clerk.

Grand Rapids, Mich.—The Board of Public Works has rejected all bids for the construction of the Canal street sewage pumping station; bids will be readvertised.

Grand Rapids, Mich.—Council has requested the Board of Public Works to furnish an estimate for the construction of a sewer in North Lafayette street.—J. L. Boer, City Clerk.

Ypsilantl, Mich.—Council has passed resolutions that materials be secured and work started on the Wallace boulevard sanitary sewer.

Cod. Wing. Minn.—Plans have been pre-

sewer.

Red Wing, Minn.—Plans have been prepared by City Engineer A. R. Ahame for sewer extension in West End to include tile pipe 1½ miles long; bids to be asked in the spring; cost, \$30,000.—Leon Meyers, Clark

Clerk. Missoula, Mont.—Citizens of the North and South Side are urging the creation of an improvement district; surveys will be made by the City Engineer; plan is to construct a sewerage system at least six miles in length.—Frank Reith, Temporary Chairman; C. L. F. Kellog, Temporary Secretary. Long Branch, N. J.—City Engineer Seaman has been directed by Council to submit cost of a 12-inch terra-cotta pipe to be laid on Park avenue to carry off surface water.

laid on Park avenue to carry off surface water.

Cincinnati, O.—Council has directed City Engineer J. H. Sundmaker to prepare estimates for constructing a sewer in the ravine from the sewer at Bedford Creek to the existing sewer at Academy avenue; ordinances have been passed for sewers in Derr street and in Third, Glenway, Considine and Grand avenues.

Cleveland, O.—Council has ordered a sewer constructed in West Sixty-sixth street.—Peter Witt, City Clerk.

Ironton, O.—Council has adopted ordinances for the construction of a sewer in Beech alley; also received from City Engineer J. R. Brown an estimate of \$2,200 for sewer in Ninth street.

Toledo, O.—Bids will be received January 6 for furnishing material and constructing a sewer in a portion of Parkwood avenue.—Reynold Voit, Secretary Board of Public Service.

Reynold Service.

Reynold Voit, Secretary Board of Public Service.

Ardmore, Okla.—City will vote on \$120.-000 bond issue for sewer extensions.—H.

H. Sayre, City Engineer.

Bartlesville, Okla.—Bids will be received about April 2 for 9,000 linear feet of 8 and 10-inch vitrified pipe sewer; plans are being prepared by W. J. Aspinwall, City Engineer.—F. B. Harnett, City Clerk.

Guthrie, Okla.—Preliminary plans are being prepared by City Engineer W. W.

Miller for two brick or concrete storm sewers; cost, \$15,000; also for four main sanitary sewers, for which 5,800 feet of 8-inch vitrified pipe are needed.—Edward Klnnan, City Clerk.

Hugo, Okla.—Bids will soon be received for the construction of a sewerage system from plans of Hiram Phillips, of St. Louis, Mo.; cost, \$125,000.

Oklahoma City, Okla.—City will readver-

tise bids for construction of sanitary lateral sewer in northwestern part of city.—George Hess, City Clerk.

Wagoner, Okla.—An election will be held January 15 to vote on \$35,000 bond issue for the construction of a sewerage system; engineer not yet selected.—A. F. Evans, City Clerk.

Bristol, Pa.—Citizens are urging the construction of a sanitary sewer system.
Chester, Pa.—Council has passed an ordinance providing for a sewer in Welsh street.
—W. T. Culles, Clerk of Council.
Wilkes-Barre, Pa.—Council has received resolution for the construction of a sewer in Tannery street.
East Providence, R. I.—The East Providence Business Men's Association is urging the bonding of the Watchamoket Fire District for \$80,000 for the construction of sewers; also the East Providence District for sewers.

sewers; also the East Frovidence Districtor sewers.

Columbia, S. C.—Council has appropriated \$900 for the extension of the sewer work on Taylor street to Bull street.

Arlington, Tex.—City has voted \$25,000 bond issue for sewer construction.

Dallas, Tex.—The City Commission has ordered the City Secretary to advertise for bids for paving certain streets of the city.

Seymour, Tex.—The O'Neil Engineering Company, Dallas, Tex., will supervise construction of a sewer for which \$12,000 of bonds have been voted.—L. A. Donnell, City Secretary.

struction of a some struction of a sever bonds have been voted.—L. A. Donnell, Chy Secretary.

Norfolk, Va.—The Board of Control has asked for an appropriation of \$5,000 for sewerage connections; fund to become available February 1.

Burlington, Wash.—City is considering the installation of a sewer system.

Spokane, Wash.—Council has received plans for the construction of a sewer on Sixth avenue from Maple street to Adams street; estimated cost, \$2,133.

Oshkosh, Wis.—Council is considering the building of relief sewers; cost, \$26,500.

Toronto Ont., Can.—The Provincial Board of Health has approved plans for the construction of the trunk sewer and sewage disposal plant.—C. H. Rust, City Engineer.

BIDS RECEIVED AND CON-TRACTS AWARDED

Pasadena, Cal.—E. L. Plantell has been awarded contract to construct sewer in Euclid avenue at a cost of \$3,850.—Heman Dyer, City Clerk.

Hartford, Conn.—The Board of Contract and Supply has received seven bids on the tile sewer to be laid in Windsor street, and the bids were refered to the City Engineer for computation and report; the bid of F. B. and W. H. O'Neil is the lowest. with Berardino & Silvestri next. The bids are as follows:

F. B. & W. H. O'Neil—18-inch tile, \$1.41: 15-inch tile, \$1.25; manholes, \$25; house connections, \$3; branch connections, 59 cents; working time, 18 days.

Bernardino & Silvestri—18-inch tile, \$1.47; 15-inch tile, \$1.38; manholes, \$40; house connections, \$10; branch connections, 5 cents; working time, 15 days.

Charles H. Slocomb—18-inch tile, \$1.55; 15-inch tile, \$1.25; manholes, \$40; house connections, \$7.50; branch connections, \$1; working time, 20 days.

Hartford Paving & Construction Company—18-inch tile, \$1.70; 15-inch tile, \$1.60; branch connections, \$10; branch connections, \$10; branch connections, \$2.25; working time, 25 days.

John M. Ferranti—18-inch tile, \$2; 15-

pany—18-inch tille, \$1.70; 15-inch tille, \$1.60; manholes, \$55; house connections, \$10; branch connections, \$2.25; working time, 25 days.

John M. Ferranti—18-inch tile, \$2; 15-inch tile, \$1.75; manholes, \$25; house connections, \$10; branch connections, \$12.5 working time, 15 days.

Eveline Brothers, New Britain—18-inch tile, \$2.18; 15-inch tile, \$1.80; manholes, \$50; house connections, \$12; branch connections, 50 cents; working time, 25 days.

On the items of foundation, rock excavation, overhaul and concrete the prices were stipulated in the specifications.

Lincoln, III.—The Board of Local Improvements has let the contract for building the 12-inch vitrified pipe sewer on Broadway, 380 feet, from Beason to Ladue street one block, to Charles Warfield, whose bid for the whole job was \$234.40; the only other bidder was Lynn R. Parker, whose bid was \$239.80.—Chas. E. Barron, Clerk, Board of Local Improvements.

Indianapolis, Ind.—Schauer & Roesinger, contractors, have an additional ten days in which to file a bond for the construction of the Brightwood sewer, which is to cost \$165,000. The bond will be for \$82,500, one of the largest that has been required for some time. The contractors, through the W. M. Fogarty Agency, which is to furnish the bond, said it would require a few days to get the bond from the home office of the bonding company; the contract was first let to John Jenkins, who declared that he had made an error in estimating and failed to furnish the necessary bond and sign a

contract. His certified check for \$4,750 was forfeited, and he now has a case in the County Courts, seeking to recover the

check.

Bogalusa, La.—Erwin Bros., New Orleans, have been awarded the contract for constructing a sewer system.

Franklin, La.—Council in special session opened bids for the laying of a sewer drainage on Iberia street, from the High School to Bayou Teche, and the bid of Aiken, O'Reilly Company, of \$2,637.88, was accepted.

opened bids for the laying of a sewer drainage on Iberia street, from the High School to Bayou Teche, and the bid of Aiken, O'Reilly Company, of \$2,637.88, was accepted.

Fort Robinson, Neb.—Bids for the construction of the sewer system and water works have been received as follows: Tinsway & Garrand, Sheridan, Wyo., \$17,300; J. J. Hanighen, Omaha, Neb., \$12,538. Capt. F. T. Arnold, Constructing Q. M., U. S. A. Cape May, N. J.—W. H. Church, one of four contractors who bid on the building of storm water sewers December 22 has served notice on the City Clerk that the award of contracts G and H must be made to him because he is the lowest bidder who complied with the specifications requiring the deposit of certified checks with each bid; he claims that Harvey Bennett, who was the lowest bidder, did not comply with this condition. City Clerk Thompson asserts that proper checks were filed with all bids. The work on two contracts in question aggregates over \$20,000.

Passaic, N. J.—The Sewer Committee of Council has awarded the contract for a sanitary sewer in Highland avenue, between Dayton and Barbour avenues, to John T. Harron; there were two other bidders, James Maybury & Son and the De Vogel Contracting Co.

Binghamton, N. Y.—The Board of Contract and Supply has awarded contract to John Tyne for the construction of the Ireland avenue sewer.

Brooklyn, N. Y.—The Empire Contracting Co., 234 88th street, has been awarded contracts by the Borough for constructing sewers in Hinckley Place, from Coney Island avenue to Stratford road; 75th street, from Eighth to Eleventh avenue; Senator street, from First to Second avenue; and in Second avenue, from 71st to 73d street.

New York, N. Y.—Bids were received December 24 by Louis F. Haffen, President Borough of The Bronx, for the construction of sewers as follows: Antonio Manseuolli, 168 East 205th street, \$28,940; Wakefield Construction Co., \$36,540; Voorhees Sullivan, \$45,925; John B. Malatesata, 3169 Jerome avenue, \$45,148; P. J. Duffy, 2137 Broadway, \$37,706; D. W. Mora

D. Burd, H. P. Hahn, J. C. Devine, E. S. Royer.
Odd Row storm sewer—Turnbull & Son, John Skeeles, L. D. Burd, H. P. Hahn, J. C. Devine, E. S. Royer.
Dayton, O.—Three contracts were let by the Servers: Christian Poock will build the outlet for the Rubicon Creek storm water sewer for \$555, to be finished by March 1; William J. Kernan was given the contract to make the reinforcements to the Apple street storm sewer to cost \$724, and to be finished by April 1. Kernan was also awarded the contract to pave the alley south of Third street and east of Wayne avenue, in the rear of the American Cigar Company's plant. Metropolitan block and limestone are to be used, the job to cost \$721.

ironton, O.-Bids for the construction of

Ironton, O.—Bids for the construction of the Hawk street sewer were received as follows: Zack Sands, \$274; Ironton Construction Company, \$276.75; John H. Francisco, \$326; Samuel Stanley, \$367.50.

Glen Mills, Pa.—The Board of Managers of the House of Refuge, Glen Mills, has made a contract with the Latta & Teray Construction Company, of Philadelphia, for the construction of a sewage disposal plant on the grounds of the Girls' House of Refuse, at Darlington, Delaware County.

Pittsburg, Pa.—Sewer contracts have been awarded as follows: Ott Bros. 2.982 feet 15-inch pipe sewer, 1¼-inch shell, in 8-foot trench, 83 cents; D. Dinardo, 394 feet 12-inch pipe sewer, 1-inch shell, 9-foot trench, 85 cents; Ott Bros., 275 feet 10-inch pipe sewer, %-inch shell, 11-foot trench, 88 cents; Evan Jones, 511 feet 42-inch brick sewer, 9-inch shell, 13-foot trench, 86 cents; Evan Jones, 511 feet 42-inch brick sewer, 9-inch shell, 13-foot trench, \$6 Evan Bros., 321 feet 24-inch pipe sewer, 2-inch shell, 12-foot trench, under asphalt pavement, \$3.74; Neelan & Daly, 246 feet 20-inch pipe sewer, 1¾-inch shell, 15-foot trench, under block stone pavement, \$3.35. Following prices are for other accessories: Maning the service of the shell of the she

holes, 10 feet deep, \$30; 12 feet deep, \$40; 15 feet deep, \$50; sheathing left in trench, \$30; iron or filled top inlets complete, trapped, \$90; untrapped, \$70; wages common labor, \$1.25 to \$1.65.—N. S. Sprague, Supt. Bureau of Construction

\$1.25 to \$1.65.—N. S. Sprague, Supt. Bureau of Construction.

Redfield, S. D.—The following bids were received December 14 for constructing 2,160 feet of 15-inch, 1,920 feet of 18-inch, and ten manholes: James Kennedy, Fargo, N. Dak., \$17,740; G. W. Haggart, Fargo, \$16,987; A. I. Olding, Redfield, \$18,957; J. J. Dunnegan, Shenandoah, Ia., \$13,566 (awarded contract).

Dunnegan, Shenandoah, Ia., \$13,566 (awarded contract).

Salt Lake City, Utah.—James Kennedy, of Fargo, N. D., has secured contract from the Utah Light & Ry. Co. to build a conduit along East Seventh street from Tenth to Eleventh street, to take care of the waters from the ditch bordering the street railway company's lines on East Seventh street and from the swamps in the neighborhood of that street and South Eleventh street; the contract price is about \$22,000.

Suffolk, Va.—H. M. Macleary & Co. have contract for installing sewers in Charles and Jackson streets.

Spokane, Wash.—For construction of sewer on Mallon avenue, from Cedar street to a point 100 feet east of Adams street: Engineer's estimate, \$1,190, G. Burgie bid \$1,575; Thos. Malony, \$1,142 (awarded contract).

WATER SUPPLY

Auburn, Ala.—Citizens will vote January 12 on \$12,000 bond issue for water works.

Booneville, Ark.—Booneville Light and Water Company has been incorporated to construct and operate water works system; capital, \$50,000.—John P. Thayer, President. Camden, Ark.—The Camden Water Company has decided to expend \$25,000 in improvements.

pany has decided to expend \$25,000 in approvements.
Gridley, Cal.—The Board of City Trustees has decided to equip the new water works with two pumping units, one to consist of a motor and pump and the other to be a boiler and engine; the former will be of the water tube type and the latter triple expansion of high efficiency; Board is also proceeding with plans for constructing a house for the water works and lighting plant.

proceeding with plans for constructing a house for the water works and lighting plant.

Oakland, Cal.—Civil Engineer Thomas Risley has been appointed inspector to supervise the erection of the salt water fire pumping station at Willows by the Board of Public Works.—Acting Mayor Ellsworth.

San Francisco, Cal.—The Board of Supervisors has authorized the Board of Public Works to enter into contract to purchase the cast-iron pipe and connections for the auxiliary fire protection system; with hydrants, gates, valves and appurtenances; the system will cost \$1,850,000; also passed bills authorizing the construction of ten fire cisterns; cost, \$84,000.

Antonio, Colo.—Citizens have voted to install a gravity water works system.

Waterbury, Conn.—City will receive bids January 11 for \$100,000 water bonds.—W. H. Sandland, City Clerk.

Clearwater, Fia.—Bids on furnishing material or on construction of water works will be received by H. W. Bivins, Secetary-Treasurer Board of Bond Trustees; \$25,000 bond issue has been voted.

Daytona, Fia.—Bids will be received January 25, 3 p. m., for a complete water works plant to cost \$50,000; gasoline power; 75,000-gallon tank on a 100-foot tower; also bids will be received January 21 for \$50,000 5 per cent. bonds.—D. D. Rogers, Board of Public Works.

St. Petersburg, Fia.—City is considering

cent. bonds.—D. D. Rogers, Board of Public Works.

St. Petersburg, Fla.—City is considering purchase of about 80 tons 6-inch water mains.—R. Veillard. Chairman, Water Works Commission.

Albany, Ga.—City is considering an extension of the water works system.

Fitzgerald, Ga.—City will purchase lead and hydrants to be used in connection with extension of waterworks system.—A. H. Denmark, Secretary Water, Light and Bond Commission.

Griffin, Ga.—J. W. Hammond, Superintendent, Water and Sewerage Commission, has recommended the following improvements at the City Water Works: Additional reservoir, 200,000 gallons capacity; an electric pump, 500,000 gallons capacity; extension of water mains, using 8-inch pipe.

extension of water mains, using e-morphipe.

Macon, Ga.—City Marshal B. L. Hendricks has reported to Council that the City is in a position to issue \$1,500,000 in bonds and have a surplus value of over \$600,000, own its own water and lighting plants, and have for paving and improvements a balance of \$750,000.

Summerville, Ga.—Village Council has decided to purchase water meters and sell them to property owners at cost; the kind of meter was not chosen.

Springfield, III.—Supt. Southwick has recommended that the City install a new pump, a water-tube boiler, another large

main and settling basins or a filtering

Waukegan, III.—City is considering the archase of a 5,000,000 gallon waterworks

Evansville, Ind.—City is securing estimates for a waterworks system.
Thorntown, Ind.—Charles Brosman, Indianapolis, will prepare plans for a water

Thorntown, Ind.—Charles Brosman, dianapolis, will prepare plans for a water works system.

Coffeyville, Kan.—City is considering the installation of a filtration plant; capacity, 2,000,000 gallons.—D. M. Blair, Superintendent of Water Works.
Frontenac, Kan.—City will install additional hydrants on the North Side for fire protection.

Independence, Kan.—Bids will be asked Independence, Kan.—Bids will be asked Irly in the spring for a 7,000,000-gallon reforced concrete settling basin.—J. D. ramer, City Clerk; A. D. Stivers, City En

inforced concrete settling basin.—J. D. Kramer, City Clerk; A. D. Stivers, City Engineer.

Kanapolls, Kan.—Town is considering the construction of water works.

Oakley, Kan.—Council is considering the construction of a water works.

Shelbyville, Ky.—Shelbyville Water and Light Company will increase its capital stock from \$20,000 to \$40,000 to provide for extensions and improvements.

Easthampton, Mass.—City has obtained a loan of \$32,000 for the construction of a water works system.

Lynn, Mass.—The Committee on Water Supply will recommend to the City Council the adoption of an order providing for an appropriation of between \$5,000 and \$10,000 for the draughting of detailed working plans to be used in installing the slow sand filtration system approved by the Water Board and State Board of Health.—E. V. French, Water Board.

North Adams, Mass.—Town is considering the erection of a new storage reservoir.

Springfield, Mass.—Bids have been adver-

voir.

Springfield, Mass.—Bids have been adver-tised for the purchase of \$1,800,000 3½ per cent. bonds for the purpose of maintaining the contract work on the Little River Wa-

ter Supply.

Springfield, Mass.—Chief Pomphret, in regard to the proposed water extension i Fairview and Smith Highlands, has recommended that a sufficient number ohydrants be installed for proper fire protection.

ommended that a sufficient number of hydrants be installed for proper fire protection.

Battle Creek, Mich.—Supt. Bugden of the Water Works has been instructed by the Board of Public Works to secure bids on all kinds of pumps and specifications have been prepared with this in view.

Battle Creek, Mich.—Water main leading from Jewell street to the new car shops will have to be relaid.

Escanaba, Mich.—The Escanaba Water Company is considering issuing bonds for extensions and improvements and the construction of a filter plant.

Norway, Mich.—City will expend about \$24,000 for pipe for water extensions.

Duluth, Minn.—Bids will be received January 7 for furnishing cast-iron water and gas pipes.—L. N. Case, Manager Board of Water and Light Commissioners.

Minneapolis, Minn.—The State Drainage Commission has ordered a preliminary survey of the Minnesota river from Big Stone lake to Mendota, with a view to deepening and straightening the channel and constructing reservoirs; cost, \$2,000,000.

Edina, Mo.—Citizens have voted an issue of \$50,000 water works bonds.

Kansas City, Mo.—The Board of Fire and Water Commissioners are considering purchase of new pumps at the Quindaro and Turkey Creek pumping stations; at Quindaro a 25,000,000-gallon pump will be placed: cost. \$50,000 ta Turkey Creek a 20,000,000-gallon high-pressure engine; cost, \$125,000.

\$125,000.

Springfield, Mo.—The Springfield Water Company has decided to lay larger and additional water mains during 1909.

St. Louis, Mo.—Bids will be received for 500 tons of 8-inch, Class B, cast-iron pipe for March delivery; bids will also be called for in April or May for laying the pipe.—J. R. Cullinane, 6600 Delmar avenue, Secretary and Manager West St. Louis Water Company.

I. R. Cullimane, we vest St. Louis Water Company.

North Platte, Neb.—Council has passed second reading of an ordinance granting a franchise to the present Waterworks Company for 20 years; Company will install 3 miles of 6-inch mains and set 34 additional hydrants.

Jersey City, N. J.—The Street and Water Board has asked the Board of Fire Underwriters just where they want 100 extra fire hydrants located in this city; when desired information is given, hydrants will be installed.—Commissioner Finke, of the Water Board.

Orange, N. J.—Ex-Mayor Isaac Schoenthal has recommended that Campbell's Pond dam be either rebuilt or a new dam constructed 25 or 30 feet below present dam.—Willet B. Gano, City Clerk.

Williamstown, N. J.—Citizens are considering the formation of a borough gov-

ernment and the installation of a water

ernment and the installation of a water plant.

Auburn, N. Y.—Hazen & Whipple, of New York City, are inspecting the water shed with a view to making any changes necessary for its improvement; and also determine whether it is feasible to construct a filtration plant.

Earlville, N. Y.—The Village Water Board will install a system of meters.

Schenectady, N. Y.—The Schenectady Power Company has decided to construct a storage dam on Walloomsac Creek near Walloomsac.

a storage dam on Walloomsac Creek near Walloomsac.
Dayton, O.—G. H. Benzenberg, Consulting Engineer, has been employed by the Servers to consider the local water situation and report the best possible methods of providing relief to and an additional supply for the Water Department; every one having a proposition to offer on the subject are requested to submit it in writing before January 10.

Hiram, O.—The State Board of Health has approved plans for improving the water works.

nas approved plans for improving the water works.

Ironton, O.—Council has employed J. N.
Hill, an expert hydraulic engineer, to investigate the pure water system.

Put-in-Bay, O.—Citizens will vote on January 9 on bond issue for a water works system.

Ardmose Citizens Council and Council and

system.

Ardmore, Okia.—City will vote on \$345,000 municipal improvement bond issue; \$75,000 will be used for improvements to water works, \$120,000 for sewer extensions, \$25,000 for paving street intersections, \$25,000 for parks and boulevards, and \$20,000 for improvements to fire stations and installation of fire alarm system.—H. H. Sayre, City Engineer.

of the alarm system.
Engineer Cokla.—City Engineer W. W. Miller is preparing plans for a reinforced concrete pit for the city water works; cost, \$7,000.—Address Edward Kinnan, City

74,000.—Address Edward Kinnan, City Clerk.

Hooker, Okla.—City has voted an issuance of \$20,000 bonds for construction of water works and electric light plant.

Marlow, Okla.—City has not yet engaged an Engineer for the improvements to be made at the power plant.—T. T. Eason, Chairman, Purchasing Committee.

Tulsa, Okla.—Council is considering a \$20,000 bond issue for the erection of a pump at the water plant.

Astoria, Ore.—All bids opened December 21 by the Water Commission for furnishing material and constructing about 12,000 feet of 24-inch concrete water pipe and about 13,000 feet steel water pipe and furnishings, have been rejected.—C. S. Wright, Chairman.

an. Portland, Ore.—Council has ordered the

Portland, Ore.—Council has ordered the issue of water bonds to the amount of \$3,000,000 and the sale of bonds to the amount of \$250,000.

Altoona, Pa.—Mayor S. M. Hoyer has approved resolution for special election on \$300,000 bond issue for completing the work of constructing Lake Altoona.

Bethlehm Par —Town Council has passed

\$300,000 bond issue for completing the work of constructing Lake Altoona.

Bethlehem, Pa.—Town Council has passed the water bond ordinance, providing for the obtaining of the assent of the voters at the February election to an increase in the borough indebtedness for \$175,000 for the erection of a new water plant.

Galeton, Pa.—A new corporation has been organized for the purpose of furnishing water to the residents of this borough from artesian wells on which drilling will begin within the next 30 days; some of the stockholders in the new company are Thomas E. Sullivan, Mart E. Binke of Galeton, and William Stillson of Oswayo.

Lebanon, Pa.—Councils have passed the Eckenroth City Supply Dam bill providing for an appropriation of \$22,000 for the raising of the breast of dam No. 2 at South Mountain to impound 35,000,000 more gallons of water; City Engineer T. R. Crowell has submitted a plan to lower the bed of the Quettapabella Creek about 2½ feet to prevent flood conditions in the spring; plan also involves purchase of the Shickler mill dam at Ninth street for \$10,000.

Philadelphia. Pa.—Revised plans for the

0,000.

Philadelphia, Pa.—Revised plans for the ter beds and buildings at Queen Lane ave been completed; bids will be asked trly in the new year; cost, about \$2,000.—0.—George R. Stearns, Director of Public Corks

Works.

Pottsville, Pa.—The Pottsville Water
Company is planning to erect a large
storage basin in the eastern section of
Pottsville.

Pottsville.

Newport, R. I.—The Newport Water
Works will install a new filtering plant at
its pumping station at the main reservoirs.

Aberdeen, S. D.—City Engineer D. C.
Washburn will examine different makes of
electric motors in Minneapolis, as the city
purposes to buy one for the sewer pumping
plant.

plant.
Cleveland, Tenn.—City is considering issue of \$50,000 bonds for the purchase of the existing water works.—C. S. Mayfield,

Knoxville, Tenn.—The Water Committee is undecided as to whether the city should extend the franchise of the Knoxville Water Company or purchase the plant.—Jas. H. Walker, Chairman.

Nashville, Tenn.—Bids will be received January 7 for furnishing f. o. b. Nashville, Tenn., 276 6-inch valves, 11 8-inch valves, 13 12-inch valves, 145 fire hydrants and about 35 tons of special casting for 6, 8 and 12-inch pipe.—George Reyer, Superintendent of Water Works; J. B. Alexander, Chairman Board of Public Works.

Bryan, Tex.—Council has decided to construct water works and a sewerage system.

Childress, Tex.—The Ft. Worth and Denver Railway Company has purchased a Water Works system and will purchase 6-inch and 8-inch mains and erect a steel stand-pipe, capacity 100,000 gallons.

Dallas, Tex.—City Secretary J. B. Winslett will advertise bids for the furnishing of an air compressor for the Oak Cliff water works.

Denison, Tex.—An election will be held January 20 to vote on \$50,000 bonds for improving the city's water system.

El Campo, Tex.—A company, with A. L. Strang, of New York, as President, has acquired water works, lighting plant and ice factory of El Campo Light, Ice and Water Company; it will make improvements and extend system; erection of standpipe and construction of sewerage system is contemplated.

Haskell, Tex.—Citizens will vote December 21 on issue of \$29,000 bonds for severage

and extend system, erection of standard and construction of sewerage system is contemplated.

Haskell, Tex.—Citizens will vote December 31 on issue of \$23,000 bonds for constructing water works; the O'Neil Engineering Company, Dallas, Tex., will prepare plans and supervise the construction.

Mart, Tex.—Citizens will vote in February on the question of issuing bonds for a water works system.

Sanderson, Tex.—E. McGinley, El Paso, Tex., is promoting the establishment of a water works system, electric light plant and ice factory.

Temple, Tex.—City will install fire plugs of the same size now in use elsewhere in the city; estimated cost of plugs, \$120; 8,600 feet of 4-inch pipe and 2,000 feet of 6-inch pipe; \$4,380; specials, \$175; 20 4-inch gate valves, \$200; laying new equipment, \$2,000; total, \$7,475.

pipe; \$4.380; specials, \$175; 20 4-inch gate valves, \$200; laying new equipment, \$2,000; total, \$7,475.

Temple, Tex.—City will raise the 8-inch pipe from the present line to the river.

Temple, Tex.—City has planned extensive improvements, enlargements and additions to the water works system; a stretch of pipe will be replaced between the reservoir and the Leon River with pipe of a larger capacity; \$50,000 will be expended.

Vernon, Tex.—Council is considering the question of constructing water works.

Rutland, Vt.—G. C. Whipple, of New York, N. Y., has recommended that water be taken from North branch of Cold River and a reservoir constructed; estimated cost, \$116,400.—H. O. Carpenter, Mayor.

Franklin, Va.—The Lytoon Manufacturing Corporation will purchase standard steam piping, following lengths and diameters. respectively: Diameters, 7, 8, 10, 11, 12, 14 16 and 18-inch; lengths, 12, 13½, 16, 18, 19, 22, 25 and 28-inch; these pieces of piping to be merely faced on ends, made parallel and have no threads.—J. W. Lytton, care of Murrill & Keizler, 200 North Holliday street, Baltimore, Md.

Aberdeen, Wash.—Bids have been advertised by the city for 6,000 feet of 6-inch.

Baltimore, Md.

Aberdeen, Wash.—Bids have been advertised by the city for 6,000 feet of 6-inch and 4,000 feet of 4-inch water pipe and 30,000 pounds of service pipe.

Chehalis, Wash.—A committee of five will appraise the value of the present water plant so as to get an intelligent idea as to what would have to be paid for it in case water bonds were sold to put in the new \$175,000 gravity water system that has been voted for by the citizens.

put in the new \$175,000 gravity water system that has been voted for by the citizens.

Hillyard, Wash.—Council has decided to call a special election on the purchase of the Hillyard water works; price, \$69,000.

Port Orchard, Wash.—Council has passed franchise granting to A. S. Eubanks and George Cady Johnson the right to lay water mains in Port Orchard streets.

Tacoma, Wash.—Council has decided to make the improvements to the present water system along the lines laid down by Commissioner of Public Works McGregor; estimated cost, \$200,000.

Tacoma, Wash.—Council has voted \$250.000 for the improvement and extension of the water system.—A. J. Whitney, Engineer, Water Works.

Tacoma, Wash.—City Engineer Frank L. Davis has men at work making surveys for the new reservoir at Station C and also laying out the line of the new water mains to Fletcher Heights; a crew will start soon on the surveys for the pipe line to Clover Creek springs; work has been authorized in a resolution adopted by the City Council; general estimate of the proposed work, which includes a 500,000-gallon standpipe on Fletcher Heights and Intakes at Clover Creek springs, with more than 11 miles of

pipe lines, is \$200,000; money for this work will be secured by the sale of special water fund warrants to be paid out of the receipts of the Department.

Niagara Falls, One., Can.—Plans are being prepared for the Ontario Power Company for the construction of a pipe line from the intake at Dufferin Islands to its power house below the bank at the foot of the Horseshoe Falls; distance, three-quarters of a mile; company is considering increasing the output of the plant by 65,000 h.p.; cost, about \$800,000.—F. V. Greene, President and General Manager, Buffalo.

BIDS RECEIVED AND CON-TRACTS AWARDED

Phoenix, Ariz.—Only two bids were submitted to the Water Users Association for the construction of the new Highland canal, to cost between \$50,000 and \$70,000, east of Mesa, and both were rejected; it was decided to advertise again.

Gridley, Cal.—The Board of City Trustees received five bids for the construction of the steel tank and tower for the city waterworks system. The bids were as follows: Minneapolis Steel & Machinery Co., San Francisco, \$4,350; Chicago Bridge & Iron Works, Chicago, \$3,480; Des Moines Bridge & Iron Works, Des Moines, Ia., \$3,830 (awarded contract); Hugh McGuire, Marysville, Cal., \$4,307; Edward Cahill, San Francisco, \$4,400. Mr. Cahill made a bid of \$4,650 for a concrete tank and tower.

Los Angeles, Cal.—Contract for constructing the Antelope Division of the Los Angeles Aqueduct under Specifications No. 46, aggregating over half a million dollars, has been awarded to P. A. Howard, as follows: Item 1, completed and lined tunnel, 1,485 linear feet, at \$30 per linear foot; item 2, lining tunnel excavated before contract, 280 linear feet, at \$12 per linear foot; item 3. canal lining with cover and backfill, 58,625 linear feet, at \$12 per linear foot; item 4, excavation, 283,140 cubic yards, at 48 per cubic yard; item 6, rubble concrete, 100 cubic yards, at \$8 per cubic yard, item 6, rubble concrete, 100 cubic yards, at \$8 per cubic yard, at \$9 per cubic yard, at \$8 per cubic yard, at \$9 per cubic yard, at

specifications and in conformity with the conditions therein named, for the reasonable cost of such work, plus 10 per cent of such cost.

San Francisco, Cal.—The Board of Public Works has entered into a contract with the Byron Jackson Iron Works to furnish and install pumps and turbines for the auxiliary fire protection system and fire boats; for the pumps and turbines which go into the boats the city will pay \$53,000; for those to be located in stations on shore the city will pay \$67,000. This contract was awarded some time ago, but the D'Olier Engineering Company applied for an injunction restraining the Board from entering into the contract on the claim that the bid of the D'Olier Company was lower than that offered by the Jackson Company. Judge Seawell has since dissolved the injunction and the Board lost no time in closing the contract. Attorneys Mastick and Partridge appeared before Judge Seawell and presented affidavits to the effect that the D'Olier Company was not an actual manufacturer of pumps, but was only a pump broker, a firm which takes orders for installations and has the actual machines made at other works. On this showing Judge Seawell threw the case out. An affidavit was also presented to show that the D'Olier company had never filed a copy of its articles of incorporation in this State. There was also an affidavit by G. H. Du-Bols, president of the Byron Jackson Iron Works, describing the company's plant and its ability to turn out the pumps, and calling attention to the fact that it would take from three weeks to ninety days to supply missing parts from the Pennsylvania company, whereas the local firm could supply them in from six to eight hours.

Covington, Ga.—City has awarded following contracts in connection with water works system to be constructed: Standpipe, R. D. Cole Manufacturing Co., Newnan, Ga.; duplex pumps, Henry R. Worthington. 115 Broadway, New York; centrifugal pumps and motors, Platt Iron Works Co., Dayton. Ohio; hydrants, R. D. Wood & Co., 400 Chestnut street, Philadelphi

etc. J. B. McCrary & Co., Empire Building, Atlanta, Engineers.

Fitzgerald, Ga.—City has awarded contract for \$3,600 worth of new machinery for water and light plant and \$12,000 worth of cast-iron water mains for extensions to water system; equipment, etc., for water works will include air and compound steam air compressor and duplex Worthington compound pump; reservoir, 16 x 34 feet; five and one-half miles mains and hydrants; construction by day labor under superintendence; cost, \$25,000. A. H. Denmark, Secretary Water, Light and Bond Commission.

Secretary Water, Light and Bondsion.

Chicago, III.—We are informed that bids were opened December 29 by John J. Hanberg. Commissioner of Public Works, for furnishing and delivering to the city pipe yards approximately 5,599 tons of 6, 8 and 12-inch cast-iron water pipe, and the contract has been awarded to the U.S. Cast Iron Pipe and Foundry Company. at \$24 per ton.

fron Pipe and Foundry Company. At your per ton.

Winterset, Ia.—The Des Moines Bridge & Iron Co., of Des Moines, has secured the contract for constructing water works for \$54,490; other bids received were: Cook Constr. Co., Des Moines, \$58,490; Turner Roland Co., Des Moines, \$58,490; Kats Craig Constr. Co., Omaha, Neb., \$58.888; W. D. Lovell, Minneapolis, Minn., \$57,840; G. Jaeger, \$57,300, and T. C. Brooks & Son, \$56,900.

ger, \$57,300, and T. C. Brooks & Son, \$56,-890.

Garden City, Kan.—H. Boyd Brydon, of the firm of Sargent & Lundy, Contracting Engineers, who have been awarded the contract for the power plant which will be built by the Kansas-Colorado Power Transmission Company, in Garden City, is making an investigation of the underground water supply of this section; he is accompanyed by L. M. Markham to Deerfield and has talked with Superintendent Hogle, of the Government pumping plant, and I. W. McConnell, Consulting Engineer of the Reclamation Service.

Missoula, Mont.—Clinton & Desmarais have secured the contract for rebuilding the dam of the Grass Valley Ditch Co.

Perth Amboy, N. J.—Hardiman & Dedricksen have been awarded contracts by the Water Board for laying 1,500 ft. of 6-inch water pipe on Hall avenue, Pacific avenue and Sheridan street. Thomas J. Clark is President.

and Sheridan street. Thomas J. Clark Is President.

Grand Forks, N. D.—Council has awarded the contract to the Roberts Filter Mfg. Co., Philadelphia, for a mechanical filter plant. at \$3.017. The contract for the pump house was awarded to the Northern Construction & Engineering Co., at \$9,175. J. J. Smith is City Engineer.

East Liverpool, O.—The lowest bid received December 23 by the Board of Public Service for constructing filtration plant is stated to have been submitted by Luyster & Lowes Co., of Dayton, for about \$39,000.

Warren, Pa.—W. R. Lavery has been awarded the contract for constructing a filtration plant for the American Water Works & Guarantee Co., 345 Fourth avenue, Pittsburg.

& Guarantee Co., 846 Formular, burg.

North Yakima, Wash.—The Hallidie Machinery Company has been awarded the contract for the machinery to be used in the Pomona Heights pumping plant on the Yakima river north of this city for \$15,805.

LIGHTING AND POWER

Auburn, Ala.—Council has granted 30-year franchise for lighting city.

Booneville, Ark.—The Booneville Light and Water Company has been incorporated to construct and operate water works system. electric light and power plant and telephone exchange; capital, \$50,000.—John T. Thayer, President; W. Earl Harrell, Secretary-Treasurer

exchange; capital, \$50,000.—John T. Thayer, President; W. Earl Harrell, Secretary-Treasurer.

Arbuckie, Cal.—Wm. H. Ash will install an electric lighting plant for a hotel and is considering installing a plant large enough to furnish lights for the town.

Chico, Cal.—City has advertised bids for the lighting for the year of 1909; present contract expired December 31.

Gridley, Cal.—The Board of Trustees is proceeding with plans for a house for the lighting plant and water works.

Redondo, Cal.—The Pacific Light and Power Company is arranging for the construction of a duplicate of its power plant adjoining the site of the present one; six turbines operated independently of each other will be installed.

San Mateo, Cal.—The City Trustees have received from the Light and Water Committee a favorable report on the request for lights and hydrants on D street between Bellevue and the city limits for two lights and one hydrant; Trustees have ordered the same to be installed.

Colorado Springs, Col.—Town is considering a municipal lighting plant.

Telluride, Col.—The Telluride Power Company has sold \$2,000,000 bonds; money will be used for enlarging and improving

its power systems in Colorado, Utah and Idaho.—L. L. Nunn, General Manager,

its power systems in Colorado, Utah and Idaho.—L. L. Nunn, General Manager, Telluride.

Meriden, Conn.—The Meriden Gas Light Company has petitioned the General Assembly for an amendment to its charter to empower it to extend its mains and pipes within the towns of Southington and Cheshire.—Charles A. Learned, General Manager.

Rehoboth, Del.—This resort has granted an electric light franchise; lights will be installed very soon.

Washington, D. C.—A Mexican publication states that a contract for an electric plant in the City of Viesca, Coahuila, has been signed by the Governor, the Presidente Municipal of Viesca, and Martinez, Delgado y Cia. It is also reported that an electric light plant in the town of Gral. Cepeda, Coahuila, is contemplated. Particulars can be obtained of Mr. H. L. Degener, of Saltillo. Address No. 2931, Bureau of Manufactures.

White Springs, Fla.—City is receiving bids for the construction of a power house.

Elberton, Ga.—The city is contemplating numerous improvements to its electric light plant, including raising of dam and installation of larger dynamo.

Griffin, Ga.—J. W. Hammond, Superintendent Water and Sewer Commission, has recommended various improvements at City Electric Light plant, including one 350-h.p. engine, direct connected to a 240-kw., 2,300-volt, 3-phase generator, with necessary piping, exciter, switches, meters, etc.; 125-h.p. boiler, with stack, valves, piping, gauges, etc.

Thomaston, Ga.—City has voted issuance of \$10,000 bonds for enlargement and improvement of electric light plant.

Grangeville, Ida.—Benjamin Davis has purchased the White Bird Electric Company and will add new machinery.

Haden, Ida.—A company has been organized with Judge Donaldson, of St. Annony as President, to develop power of Teton River; capital, \$1,000,000.—Julian M. De Coster, Promoter.

Aurora, Ili.—Council has authorized the Lighting Committee to purchase incandescent lights for the new electric light system.

cent lights for the new electric light system.

Carmi, III.—The Olney Electric Light and Power Company's plant has been destroyed by fire; loss, \$24,000.

Chicago, III.—The Chicago Railways Company is considering the establishment of sub-stations in the South Chicago, Grand Crossing and Roseland districts.—J. M. Roach, 444 North Clark street, President and General Manager.

Joliet, III.—Plans for the electrification and illumination of Joliet's whole business district and the removal of all telegraph, telephone and power posts and wires from the streets have been prepared in general way by Charles Munroe, General Manager of the Economy Light and Power Company.

pany.

Monmouth, III.—The Rock Island Southern Railroad Company will let contracts within 60 days for a power plant on the Edwards River; company will need two 1,500-kw. turbines and necessary boilers.—W. W. McCullough, Monmouth, General Manager.

Edwards River; company will need two 1,500-kw. turbines and necessary boilers.—
W. W. McCullough, Monmouth, General Manager.
Rock Island, III.—The People's Power Company will make extensive improvements to its electric and gas plant.
Worden, III.—City is considering the issuance of \$12,000 in bonds to build a municipal electric light plant.
Flora, Ind.—The Town Board has granted a franchise to W. B. & G. B. LaBaw, of Veedersburg, for the construction and operation of an electric light plant.
South Bend, Ind.—Merchants back of the "New Centre" scheme will shortly contract for a massive gas arch to adorn South Michigan street near Jefferson.
Fairfield, Ia.—The Fairfield Gas and Electric Company will remodel its plant; cost, \$35,000.
Topeka, Kan.—Bids have been advertised for the construction and equipment of a steam plant for the municipal light plant; \$60,000 is available for the construction of a new plant.—H. K. Goodrich, Topeka, Superintendent.
Topeka, Kan.—Bids will be received January 15, 5 p. m., for \$40,000 electric light bonds.—C. B. Burge, City Clerk.
Lexington, Ky.—The Midland Electric Company, which has acquired the franchise for electric lighting recently purchased from the city by Pendleton Beckley, of Louisville, for a syndicate of Eastern capitalists, will at once begin the erection of buildings in which to put up their plant.
Campti, La.—E. W. Breazeale is considering purchase of an acetylene gas lighting plant and fixtures.

Au Sable, Mich.—The Eastern Power Company has been granted a 30-year franchise for electric light and power for oper-

Au Sable, Mich.—The Eastern Power Company has been granted a 30-year fran-chise for electric light and power for oper-ating mills and factories.—Edw. F. Loud,

Bessemer, Mich.—Council is considering ne establishment of a municipal electric

the establishment of a month of the light plant.

Cadiliac, Mich.—The Grand Rapids-Muskegon Water Power Company is so well satisfied with its venture in harnessing the waters of the mighty Muskegon, that it will build another big dam and power house.

house.

Detroit, Mich.—City will install in the municipal lighting plant one 2.000-kw. turbo unit and one 300 or 400-h.p. boiler.—Frank Mistersky, Superintendent Public Lighting

municipal infining plant one 2,000 and in unit and one 300 or 400-h.p. boiler.—Frank Mistersky, Superintendent Public Lighting Commission.

Ecorse, Mich.—Village Council is considering proposed extensions to the water mains; cost, \$15,000.—Engineer Jerome.

Filnt, Mich.—The Flint Land Company, Limited, may construct a power plant on Rifle River in Michigan; company owns flowage rights on 1,500 acres of land and controls about 14 miles of frontage on the river; it is claimed that by the construction of two dams 2,000 horsepower continuously or 4,800 horsepower for 10 hours a day can be developed.

Muskegon, Mich.—The Grand Rapids—Muskegon Water Power Company is planning to further harness the Muskegon River with a third power station.—Geo. L. Erwin, of Muskegon, Mich.—Manager H. S. Schutt,

of Muskegon.

Tolleston, Mich.—Manager H. S. Schutt, of the Michigan City Gas and Electric Company, has asked Town Council for a franchise; the Ganz Heat, Light and Water Company has also asked for a franchise.

Wells, Mich.—The Board of Supervisors of Delta County is considering the petition of the Escanaba Power Company to construct across the Escanaba River in the town of Wells, in Delta County, three dams for the purpose of accumulating, storing, manufacturing, conducting, using, selling, urnishing and supplying water and water power.—P. L. Utley, President Power Company.

Albert Lea, Minn.—The Albert Lea Light

Albert Lea, Minn.—The Albert Lea Light and Power Company has decided to expend about \$75,000 in improvements.

-K. Bagne, of Verndale, by Wadena with electric Wadena, Minn.—I

Hattlesburg, Miss.—J. H. Putnam, of attlesburg, has been selected as engineer or the proposed water power plant at Semary Falls; cost, \$150,000.

for the proposed water power plant at Seminary Falls; cost, \$150,000.

Salem, Mo.—City will vote on bond issue for extension of electric light plant.

St. Louis, Mo.—The Independence Amuzement Company, 803 North Sixth street, is considering purchase of a gas producer.

Arcadia, Neb.—John Wall, G. W. Kinsey and other business men will construct an electric light plant.

Blue Springs, Neb.—Black Brothers are considering the installation of an electric lighting plant.

New Market, N. J.—The Township Committee and Light Commissioners of Piscataway Township are considering the establishing of an independent company for the purpose of furnishing electricity for the town; a company will be organized with a capital stock of \$100,000 and erect a plant at New Market Pond; estimated cost of plant. \$10,000, and the distributing system \$90,000; J. Edward Clark and Edward Radell are interested.

Glen Cove. L. L. N. V.—The awarding

e interested.
Glen Cove, L. I., N. Y.—The awarding a new lighting contract will soon be

Canandaigua, N. Y.—The Ontario Light and Traction Company has petitioned the Board of Trustees for an amended franchise under which to own and maintain its own electric plant.—Wm. N. Brooks, Clerk, Newburgh, N. Y.—The Orange and Cronomer Lakes Power and Electric Company, lately granted a franchise, will soon ask Public Service Commission for power to begin construction; options have been secured on several hundred acres of land in the Plattekill water shed.—Edw. C. Boynton, Newburgh; E. R. Eckley, New York City.

ton, Newburgh; E. R. Eckley, New 1018 City.
Nyack, N. Y.—The Rockland Light and Power Company is making arrangements for extensive additions and improvements to its plant, which will include the installation of a 1,000-kw. turbine with surface condenser and cooling tower, switchboard, boilers, etc., and also an addition to the plant at Orangeburg, N. J.—J. S. Avery, Manager.

Manager. N. C.—A company is being organized for the purpose of developing water power and construction of hydroelectric plant on the Potomac River in Jefferson County, W. Va., for which surveys are now being made; it is proposed to develop 1,000 horsepower; plant will cost about \$300,000.—Fred H. Smith, Lexington.

Promoter.

Dayton, O.—City is considering the plan cover up the old hydraulic race from Sixth to First street; plan is to build a concrete viaduct in the bed of the hydraulic race for power pure the water for power pure. race, harness the water for power pur-poses and then fill in the long drawn out

holes; cost, \$50,000.—City Engineer Cellarius; State Engineer C. E. Perkins.

Richwood, O.—Council has turned down petition of taxpayers asking for a vote for a municipal light plant; this town has been without street lights for some time as the old contract has expired.

Bartlesville, Okla.—The Bartlesville Electric Light Company is considering the erection of a large addition to its power plant.—S. J. Smallwood, Manager.

El Reno, Okla.—El Reno Gas and Electric Company has sold its entire electric light and gas plant to Henry Schafer, of El Reno, and J. W. Maney, Oklahoma City, Okla., who will make improvements involving expenditure of \$25,000; two additional boilers and engine, cost \$20,000, may be installed.—H. H. Stephens, Manager.

El Reno, Okla.—The El Reno Gas and Electric Company will expend \$20,000 for the purchase of a unit for street railway service; it will probably be a 500-kw., 25-cycle unit of turbine type.—H. H. Stephens, General Manager.

Hooker, Okla.—City has voted an issuance of \$20,000 bonds for construction of electric light plant and water works.

Marlow, Okla.—City has not as yet engaged Engineer for the improvements to be made to electric light plant and water works; cost, \$10,000; 80-h.p. boiler may be installed.—T. T. Eason Chairman Purchasing Committee.

Okeman, Okla.—City is considering the construction of a lighting plant to cost \$80,000.

Tulsa, Okla.—Council has authorized a special election to yote on issue of \$225,000

ing Committee.

Okeman, Okla.—City is considering the construction of a lighting plant to cost \$6.000.

Tulsa, Okla.—Council has authorized a special election to vote on issue of \$225,000 worth of bonds for building a pipe line to Collinsville, establishing a system of public parks, enlarging the power system and improving the water system.

Portland, Ore.—Mayor Lane has recommended a tax levy sufficient to raise \$190,000 for establishment of a distributing wire system for electric street lights.

Portland, Ore.—Local capital has purchased the St. John Gas, Light and Heat Company and will soon erect plant on site already secured; W. S. Dole & Co., Lumber Exchange, Consulting Engineers.

Bellefonte, Pa.—Council is considering the erection of a borough light and power plant; cost, \$30,000 to \$45,000.

Connellsville, Pa.—The West Penn. Electric Company has decided to erect a power plant in Fayette County; plant will be a duplicate of the one that is now in use at Fayette Station and will cost about \$1,500,000; rated capacity, 22,000-h.p.; power house wil supply power for the West Penn. Railways Company.—James S. and H. A. Kuhn, of Pittsburg, Pa., Promoters; L. H. Conklin, General Superintendent.

Ford City, Pa.—Voters have decided to issue bonds and purchase the town electric light plant.

Harrisburg, Pa.—Council is considering an ordinance providing that proposals be received for contracts for 2,000 100 and 50-candle-power lamps for one, two, three and five years; over 2,000 candle-power lamps shall be furnished free by the successful bidder for every 40 furnished; the present contract with the Harrisburg Light, Heat and Power Company expires July 1; also an ordinance providing for the furnishing of electric current for the police patrol and fire alarm systems and authorizing the asking of bids.

South Bethlehem, Pa.—The Lamp Committee of Council is considering the construction of municipal electric light plant.

J. L. Elliott, Chairman.

Wilkes-Barre, Pa.—Council has received petitions for eight additional light

st. Matthews, S. C.—The Calhoun Railway and Power Company is receiving bids for the construction of a power house.

Madison, S. D.—City is considering the enlarging of the municipal electric light

plant.

Del Rio, Tex.—The Security Land Company is considering the erection of a gas

plant.
El Campo, Tex.—A company with A. L.
Strang. of New York, as President, has
secured electric light plant, water works
and Ice Factory of El Campo Light, Water
and Ice Company and contemplates im-

provements.
Fort Worth, Tex.—The City Commissioners have adopted resolutions and ordinances which are expected to pave the way for the continuation of the City's plans to provide a complete system of street lights.

Mason, Tex.—Mason County is consider-

ing the issue of \$40,000 bonds for a new

ing the issue of \$40,000 bonds for a new court house.

Sanderson, Tex.—E. McGinley, El Paso, Lex., is promoting a company for the establishment of electric light plant, water works system and ice factory at Sanderson.

Sherman, Tex.—Bids will be received for the erection of a building in which to install electric light machinery.—Henry Zimmerman, City Secretary.

Temple, Tex.—City has not yet decided to enter into another contract for lighting the city with the Temple Electric Light and Power Company; contract expired some time ago.

Terrell, Tex.—Bonds have been sold and plans are being prepared for the municipal electric light plant; work to begin in January.—W. C. Drake, Superintendent.

American Fork, Utah.—Richard R. Lyman, Civil Engineer, Salt Lake City, is making a survey for a power plant for the Utah County Light and Power Company, of American Fork, Utah; total cost of plant, \$100,000; in addition to the machinery a steel pipe will be needed that will carry a maximum flow of 15 cubic feet per second, with a maximum of 2,100 feet.

Shenandoah, Va.—A movement is on foot to harness the Shenandoah River at this point by the erection of a large concrete dam and the installation of a water power electric light plant; at present the town is lighted by electricity furnished by steam power.

Aberdeen, Wash.—The Grays Harbor Edward and Light Commany has decided

town is lighted by steam power.

Aberdeen, Wash.—The Grays Harbor Railway and Light Company has decided on electric lighting for South Aberdeen and Cosmopolis; cost, including cable conditions and lights. \$10,000 to \$15,000.— Cosmopolis; cost, in and lights, \$10,000

Railway and Light Company has decided on electric lighting for South Aberdeen and Cosmopolis; cost, including cable wiring and lights, \$10,000 to \$15,000.— Manager Crary.

Kennewick, Wash.—The Columbia Basin Light and Power Company has petitioned Council for permission to erect a high-voltage transmission line from its plant to Washington street and thence to Gardeen Tracts.

Barboursville, W. Va.—The United Utilities Company is planning to construct and operate a combined electric, water and steam heating plant, and will purchase the following equipment: One 25-kw. 225-volt, direct-current generating unit; one 50-gal.-per-minute turbine pump (vertical preferred), direct connected to vertical motor; two 150-h.p. boilers (vertical preferred), to operate at 125 pounds, a 3-panel switchboard for 220-volt generators to operate in parallel on six 50-amp. light and power circuits; also pipe fittings, valves, heaters.—L. L. Dowthat, Manager.

Charlestown, W. Va.—A corporation will be formed to develop water power and build electric plant for transmitting electricity from property on the Potomac River in Jefferson County; surveys have been made; cost, about \$300,000.—F. H. Stith, of Lexington, N. C., Promoter.

Parsons, W. Va.—Bids will be received January 9 by the City Solicitors for \$30,000 Water and Fire Department bonds.

Pekin, China.—Architects Frank P. Milburn & Co.. Washington, has been selected to prepare plans for an electric light plant.

BIDS RECEIVED AND CON-TRACTS AWARDED

Los Angeles, Cal.—Contract for furnishing electric cable under specifications No. 94-B, has been awarded to Standard Underground Cable Co., as follows: Item 1, 500 feet, at 54.5 cents per foot; shipping weight 1,900 pounds 1 reel at \$10; item 2, 3,000 feet, at 22 cents per foot; shipping weight 3,200 pounds; 3 reels at \$10 each; item 3, 7,500 feet, at 20 cents per foot; shipping weight 6,800 pounds; 7 reels at \$10 each; item 3, 7,500 feet, at 10.1 cents per foot; shipping weight 4,400 pounds; 7 reels at \$10 each; item 4, 7,500 feet, at 10.1 cents per foot; shipping weight 4,400 pounds; 7 reels at \$10 each; complete shipment four to five weeks, Perth Amboy, N. J.

Miami, Fla.—The proposition of the F. E. C. Hotel Co. to change the lighting system of the city by substituting 32 candle-power Tungsten incandescent lights for the present 20 candle-power ordinary incandescent lights, has been accepted by Council; the new lights will increase the lighting capacity 60 per cent at a cost of 25 per cent., or 25 cents per light per month.

North Augusta, Ga.—A contract has been closed between the Augusta-Aiken Railway and Electric Company and the City Council of North Augusta to light the streets of that place; work will be started at once, and forty of the new tungsten lights will be placed on the streets; the city has never had street lights.

Lexington, Ky.—The new Midland Electric Company of Lexington expects to be open ready for business March 1, and has let contracts for electrical machinery to the Western Electric Company, of Chicago; Frank R. Dalton has been awarded the stone foundation contract for the new plant; the Midland Company will bid on the city lighting contract.

St. Paul, Minn.—City has awarded con-

tracts for street lighting for the year 1909 as follows: To the St. Paul Gas Light Co. for illuminating and maintaining the "way of light," \$95 per post per year; for supplying the gas to the system of gas street lamps, \$15 per lamp per year; for supplying current and maintaining arc lamps operated in the underground system, \$95 per lamp per year, and for overhead system, \$85 for the year; for all additional arcs above the 89 now in operation through overhead system the city operation through overhead system the city is to pay \$8 per month and for all additional arcs above the 800 now operated on the underground system, \$9 per month, and for arcs above the 800 now operated on the underground system, \$9 per month, and for supplying and maintaining incandescent lamps on river bridges and piers and in alleys, \$2 per lamp per month. To the Patterson Street Light Co. for supplying incandescent gasoline lamps and fuel, \$27.45 per lamp per year; for furnishing incandescent gas lamp posts, \$11.25 per lamp.

Lewistown, Mont.—The Fargo Electric Co., of Fargo, N. D., has received the contract for the installation of electric lights in the courthouse for \$4,000.

Gowanda, N. Y.—The State Commission in Lunacy at Albany has awarded contract to Frost & Sheldon, of Albany, for installation of engine and dynamo and underground electric feeders from power house to superintendent's residence and staff house at the Gowanda State Homeopathic Hospital for \$5,850.

Massena, N. Y.—The St. Lawrence River

intendent's residence and staff house at the Gowanda State Homeopathic Hospital for \$5,850.

Massena, N. Y.—The St. Lawrence River Power Company has awarded contract to the Dayton Globe Iron Works, of Dayton, O., for two water turbine units, each set consisting of six 60-inch turbines, with a total capacity of 12,000 horse-power; the equipment, together with the electrical generators, will be installed during the coming spirng. T. A. Gillespie, 30 Broad street, New York, N. Y.—C. B. J. Snyder, Superintendent School Buildings, has opened the following bids for installing electric equipment in School 114, on James, Oak and Oliver streets, Borough of Manhattan, and the contract was awarded to Cowden & De Young, 237 Broadway, for \$13,893. Other bids received were: E. J. Duggan, \$15,300; Irving A. Bogan, \$15,965; Commercial Constr. Co., \$14,515; Peet & Powers, \$15,-467; A. Feldmann Constr. Co., Inc., \$14,840; T. Fred Jackson, Inc., \$14,100.

Erie, Pa.—The Erie City Engine Works, of this city, has been awarded the contract for the erection of the new electric light plant at the Erie County Almshouse at \$6,103; contract calls for the installation of two Skinner engines and two Burke Electric Co.'s generators; engines will be of 40 and 56 horse-power, and of the high speed, automatic, direct-connected type; generators will be of 25 and 35 kilowatt capacity respectively; contract for the switchboard has also been awarded to the Burke Electric Co. Youngstown, Pa.—City has awarded the West Penn Electric Co. of Cornellsville

win be of 25 and 35 knowate capacity respectively; contract for the switchboard has also been awarded to the Burke Electric Co.

Youngstown, Pa.—City has awarded the West Penn Electric Co., of Cornellsville, Pa., the contract for furnishing electric light for the streets and public buildings here; are lights on the former and incandescent lights in the latter; company will build a line into this city at once, and will furnish light, heat and power for the places of business and residences. L. H. Conklin, General Superintendent.

Charleston, S. C.—The Secretary of the Navy at Washington, D. C., has approved the recommendation of the Bureau of Yards and Docks that the contract for air compressors for the navy yards, Charleston, S. C., and Mare Island, Cal., be awarded to the Providence Engineering Works, of Providence, R. I., at \$52,900.

Emporia, Va.—The Greenesville Water Power Co, has awarded contract to Stamper Bros. & Ragland and Holland & Myers, Richmond, Va., for construction of dam across the Meherrin River in connection with construction of proposed water-power electrical plant to transmit electricity for lighting and power. The dam is to be built of granite and cement, 36 feet high at spillway and 700 feet long and will cost about \$150,000. A minimum of 1,400 horse-power is to be developed, while the maximum horse-power will probably triple low-water development. About \$75,000 additional will be expended in equipment and in taking over local electric light and telephone systems, both of which will be rebuilt. C. P. E. Burgwyn, Richmond, Engineer-in-Charge. W. Samuel Goodwin, President.

FIRE EQUIPMENT

Mobile, Ala.—Chief T. F. Price will visit Atlanta, Ga., to inspect an aerial apparatus or water tower and supply of hose, with the idea of recommending same to be purchased by the city.—Mayor P. J. Lyons.
Ft. Smith, Ark.—Council has ordered the Board of Public Affairs to purchase a fire station site on Tomson avenue.
Exeter, Cal.—City is considering the purchase of a chemical engine.
Oakland, Cal.—Council has referred the petition of the West Side Improvement

Club, asking that a fire company properly equipped be installed in the new fire house on Spencer avenue, to the Fire Board, with the request that it be granted.

Orland, Cal.—Town will organize a fire company and completely equip it.

San Francisco, Cal.—The Board of Public Works has been ordered to construct proposed engine house on the corner of Carmel and Ashbury streets; cost, \$20,000.

San Pedro, Cal.—City is considering the installation of a fire alarm system; specifications have been submitted by the Gamewell and National companies.

Greenwich, Conn.—Mianus Hook and Ladder Company is considering the purchase of a gasoline engine.

der Company is considering the purchase of a gasoline engine.

Waterbury, Conn.—The Board of Public Safety has recommended an appropriation for the purchase of one automobile chemical engine and one combination chemical hook and ladder truck.

Jacksonville, Fla.—Plans for a two-story fire station are being prepared by W. B. Camp, Architect; cost \$7,000.

Macon, Ga.—City is considering the repairing of three engine houses; cost, \$2,100.

Galesburg, Ill.—The Finance and Fire Committees of Council are discussing the purchase of a fire engine.—Mayor Shumway.

ay.

Chicago, III.—Chief Horan is urging the eed of 33 new fire companies; total cost,

Chicago, Ill.—Chief Horan is urging the need of 33 new fire companies; total cost, \$1,155,000.

Moline, Ill.—Fire Chief J. Q. Hawk has recommended the purchase of a friction brake for the fire wagons.

Fort Wayne, Ind.—Council has passed ordinances appropriating \$3,000 for new equipment for No. 3 fire station.

South Bend, Ind.—The Board of Public Safety is considering the purchase of at least one chemical auto during the coming year.—Harry Coit, Clerk.

Davenport, Ia.—Council has ordered the purchase of a new repeater and switchboard for the Fire Department; net cost, \$2,325.—Fire Chief Stoltenberg; Chief Electrician Goldschmidt. Paton, la.—City will purchase fire appa-

ratus.

Quincy, la.—City is considering the purchase of ladders for the Fire Department.

Independence, Kan.—Preliminary plans are being prepared by F. N. Bender, Architect, for a 2-story fire station, cost \$12,-000.—J. D. Kramer, City Clerk.

Salina, Kan.—City will organize a paid Fire Department.

contect, tor a 2-story fire station, cost \$12,-000.—J. D. Kramer, City Clerk.

Salina, Kan.—City will organize a paid Fire Department.

Maudville, La.—The Local Improvement Association is raising funds for the purchase of a fire engine.

New Orleans, La.—City is having plans and specifications prepared for engine house to be erected in Algiers; cost. about \$10,000.

—W. J. Hardee, City Engineer.

New Orleans, La.—President Miester, of the Fire Board, has announced that the Board would authorize the purchase of a motor chemical engine, with a capacity of 100 gallons, and carry seven men; cost, \$3,900; according to Mr. Miester, the purchase of five of the motor machines would answer the purpose of the fourteen in use and save the keep of horses and feed; ordinary chemicals cost as much as \$2,300 and the cost of horses and feed would make about \$2,900.

Everett, Mass.—The Fire Commissioners have ordered the demolition of the old Central fire station building.—F. E. Lombard, Chairman; Albert Downing, Secretary.

Springfield, Mass.—City will require 2,000 feet of hose during the coming year in order to keep the supply of serviceable hose up to the standard.

Stoneham, Mass.—Town has decided to purchase 1,000 feet of hose.—Town Clerk Green.

Buckland, N. H.—Citizens are urging the

Green.

Buckland, N. H.—Citizens are urging the formation of a fire company and the purchase of apparatus.

Asbury Park, N. J.—Council has decided to issue \$15,000 bonds for the Fire Depart-

ment.

Oakhurst, N. J.—The village is considering the organization of a fire company. Williamstown, N. J.—Citizens are considering the formation of a fire company. Woodbury, N. J.—Citizens are discussing the practicability of auto fire engines.

Oswego, N. Y.—Fire Chief R. G. Blackburn has recommended the purchase of 1,000 feet of hose.

Rochester, N. Y.—Bids have been advertised for a second size Metropolitan engine, one triple combination fire apparatus and an automobile for Fire Chief Little.

Rochester, N. Y.—The Fire Department Committee of Council has approved plans for the alteration of the home of the Washington Heights Chemical Company.

Gastonia, N. C.—Plans and specifications for proposed city fire station will be prepared by M. L. Hampton, Gastonia; cost, \$3,000.

Bottineau, N. D.—The town is consider-Oakhurst, N. J .- The village is consid-

\$3,000.

Bottineau, N. D.—The town is considering the erection of an engine house.

Columbus, O.—The Board of Safety has asked for \$271,000 to run the Department

from January to July, while from July until December it only required \$254,000; part of the increase is caused by extraordinary expense in installing the new signal system and a part because of the opening of the Fire Department in the whole district. Loraln, O.—City is considering purchase of a fire engine.

Ardmore, Okla.—City will vote on \$20,000 bond issue for improvements to stations and the installation of a fire alarm system.

Sapulpa, Okla.—Architect H. C. Lawler will prepare plans for a fire station.—S. N. Hurd, City Clerk.

Tulsa, Okla.—Council is considering \$20,000 for improvements to Fire Department.

Portland, Ore.—Council has authorized \$275,000 general bonds to be issued for fire boat and fire main purposes.

Altoona, Pa.—Mayor S. M. Hoyer has approved ordinance providing for the erection of an addition to No. 4 fire station at Green avenue and Eighth street.

Butler, Pa.—Fire Committee is considering the purchase of an automobile fire wagon within the next few months.

Holisopple, Pa.—The Hollsopple Volunteer Fire Company is considering the purchase of additional apparatus, including an engine.

of additional apparatus, including an engine.

Pittston, Pa.—Council has passed an ordinance to purchase 1,000 feet of hose.—City Clerk Flannery.

Wilkes-Barre, Pa.—A fire engine will probably be purchased for use in the East End.—Lewis P. Kniffen, Mayor.

Wilkes-Barre, Pa.—Mayor Kniffen has signed resolution appropriating \$4,000 for the purchase of property as a site for the proposed East End engine house.

Burrillville, R. I.—Town is considering extension of its fire alarm system.

Newport, R. I.—The Chief of the Coast Artillery of the War Department has requested an appropriation of \$572,500 for the installation of a fire control system.

Providence, R. I.—The Pocasset Fire Company, of Knightsville, is soliciting funds for the purchase of an electric fire alarm bell.

for the purchase of an electric fire alarm bell.

Columbia, S. C.—Council has appropriated \$33,000 for the use of the Fire Department.

Sumter, S. C.—Citizens are urging the better equipping of the local Fire Department; an engine is badly needed.

Aberdeen, S. D.—City Engineer D. C. Washburn has left for Minneapoils on business for the city; he will examine the Fire Department equipment of Minneapoils with a view to recommending additional apparatus for the Aberdeen Fire Department.

Milbank, S. D.—Town is considering purchase of more hose and another cart.

Sweetwater, Tenn.—This town has organized two volunteer fire companies.—J. Randall, Chief; H. N. Minnis, Captain.

Austin, Tex.—An independent fire company will be organized for Hyde Park.

Knoxville, Tenn.—The Board of Public Works will purchase harness for the horses in the Fire Department; collars will be purchased outside of the city, but the harness will be ordered from a local firm.

in the Fire Department; collars will be purchased outside of the city, but the harness will be ordered from a local firm.

Austin, Tex.—The Fire Committee has authorized the purchase of 5,000 feet of

Richmond, Va.—Mayor D. C. Richardson has approved an appropriation of \$15,000 for fire escapes and fire protection in public

BIDS RECEIVED AND CON-TRACTS AWARDED

Davenport, Ia.—On motion of Alderman Schnack it has been recommended to Council that the Fire Department Committee be authorized to purchase 10-circuit repeater and 12-circuit switchboard, in conformity with an offer of the Gamewell Company to furnish same for \$3,225, and allow the city credit of \$1,000 for the apparatus if displaced

credit of \$1,000 for the apparatus if displaced.

Akron, O.—The Board of Public Safety has acepted the bid of the Webb Motor Fire Apparatus Company for the three self-propelled fire trucks; the bid was \$13,500 for the three, or \$4,500 apiece; there was only one other bid, that from the Seagrave Company of Columbus; this bid was for the same amount as that of the Webb people, but this company had failed to deposit the required amount, 10 per cent. of the bid, sending only a certified check for \$500; this company also wanted to furnish air-cooled and chain-drive cars for \$11,970, but this was not according to specifications; A. G. Crouse represented the Seagrave Company; City Solicitor Greenberger advised the board not to enter into a contract until the injunction case now in Circuit Court was disposed of.

Painesville, O.—The Board of Public

disposed of.

Painesville, O.—The Board of Public Safety let contracts for reconstruction and alterations of fire department and constructing a police station as follows: General and carpenter work, Lake Erie Concrete Company, Joseph Callendar, city, \$1,933.24; steel cell work, Van Dorn Iron Works Company,

Cleveland, \$800.—Will O. Doolittle, Clerk; Franz C. Warner, Architect.
Knoxville, Tenn.—A. J. Cloyd, city, has contract at \$6,597 for erection of Ninth ward fire station, and at \$2,644 for addition to North Knoxville station; plans for both structures prepared by Baumann Brothers, Henson Building.

Norfolk, Va.—Bids received from the American-La France Fire Engine Company and the Nott Fire Engine Company for a second-size engine to replace the disabled one now owned by the Department being identically the same, the Board of Control has requested the representatives of the two concerns to set a day on which they can appear before the Board and go further into the matter; both companies offered to sell a second-size engine at exactly the same price, each making the same allowance on the crippled engine as part payment.

Ft. D. A. Russell. Wvo.—The Simpson

part payment.

Ft. D. A. Russell, Wyo.—The Simpson Construction Company, Denver, Col., was the lowest bidder for two fire stations at Ft. D. A. Russell.

ELECTRIC RAILWAYS

Fayetteville, Ark.—The construction of the proposed electric railway from Joplin, Mo., to Bentonville, Fayetteville and other points is assured; line will reach Siloam Springs, Hindsville, Monte Ne, Berryville, Rogers and Pea Ridge, as well as the other points mentioned; distance, 168 miles.

Globe, Ariz.—Geo. W. P. Hunt has petitioned Council for a franchise for an electric railway.

railway.

tric railway.

Los Angeles, Cal.—The Coast Traction
Company will add five miles of additional
track to its line during 1909.

Los Angeles, Cal.—The Hueneme, Malibu
and Port Los Angeles Railway is considering an addition of about five miles to its

Los Angeles, Cal.—The Hueneme, Malibu and Port Los Angeles Railway is considering an addition of about five miles to its system.

Vallejo, Cal.—Randall, Trowbridge & Co. Oakland, have applied to the City Trustees for a franchise to construct and operate an electric railway system.

Denver, Col.—The Denver City Tramway Company is planning to extend one of its lines to Valverde; distance about 2 miles.—C. A. Trease, Chief Engineer.

Norwich, Conn.—The Norwich, Colchester & Hartford Electric Railway Company is making surveys for the electric railway which it is planning to build between Norwich and Hartford.

Washington, D. C.—An American consular officer in Africa has forwarded a report, accompanied by pamphlets giving full particulars in regard to a project for the construction of an extensive railway line in his region. A report has also been received from an American consular officer in Latin-America containing a table which shows the concessions granted for extensions to existing railroads and the estimated cost of same, some of which are already in course of construction.—Address No. 2930, Bureau of Manufactures.

Pensacola, Fla.—An ordinance granting John E. Stillman, Henry M. Yonge and R. B. Simpson the right to build an electric railroad, beginning at the intersection of Sixteenth avenue and Cervantes street to the city limits, has been introduced in Council and referred to the Franchise Committee.

Pensacola, Fla.—The Pensacola Invest-

mittee.

Pensacola, Fla.—The Pensacola Investment Company is planning to build an electric railway from Pensacola to Magnolia Bluffs; road will connect with the present line of the Pensacola Electric Company at some point on 16th avenue and run to Magnolia Bluff; company will apply to Council for a franchise; negotiations are being carried on with Stone and Webster of Boston, Mass.

ried on with Stone and Webster of Boston, Mass.

Tampa, Fla.—The Tampa Sulphur Springs Traction Company will add two miles of track to its system.

Fairburn, Ga.—The Fairburn & Atlanta Railway Company will construct an electric railway from Fairburn through Stonewall and Red Oak to College Park; distance, 11 miles.—J. F. Golightly, of Atlanta, W. T. Roberts and J. H. Harris, Promoters.

Ocilla, Ga.—Funds have been secured for the construction of the Fitzgerald & Ocilla Electric Railway.—W. F. Byrne, of New York, and Jass. R. Turner.

Lewiston, Idaho.—Spokane and Eastern capitalists are organizing a company to build a city and interurban electric railway system and lighting plant at Lewiston Idaho; distance, 90 miles.—G. W. Boit and W. N. Bourke.

Mano; distance, so lines.—G. W. Bourke.

Bloomington, Ill.—An interurban line will be constructed from Bloomington to Jollet: distance, 100 miles.—Messrs Fisher and Harrington, Promoters.

Galesburg, Ill.—Residents of Nelsontown have petitioned Council for the extension of the street car lines.

Jerseyville, Ill.—Altonville, Jacksonville & Peoria Railway is considering the construction of 62 miles of track; road will extend from Godfrey to Jacksonville, Ill., through Jerseyville, Carrollton, White Hall.

Roodhouse, Manchester and Murraysville. Springfield, III.—The Mississippi Valley Interurban Railway is contemplating the purchase of 10 or 12 double-truck interurban

Interurban Railway is contemplating the purchase of 10 or 12 double-truck interurban motor cars.

Blufton, Ind.—The Bluffton, Berne & Celina Traction Company nas filed articles of incorporation to construct and operate an electric railway from Bluffton to Celina, O., via Berne.—Robt. Saurer, B. A. Batson and Adolph Schurg, Incorporators.

Pittsburg, Kan.—The Joplin & Pittsburg Railway Company will construct from 10 to 30 miles of new track; lines will be built, one from Pittsburg to Mulberry, Kan.—C. D. Bell, Chief Engineer.

Lewiston, Me.—Portland, Gray & Lewiston Railroad Company has completed surveys for the ruote of the projected electric railway and the rights of way have been secured; line will extend from Portland to Lewiston through Falmouth, Gray and New Gloucester.—E. W. Gross, Berlin, N. H., President; Chas. C. Benson, Lewiston, Treasurer; J. A. Jones, Lewiston, Chief Engineer.

Newtonville, Mass.—The Newton Street

Treasurer; J. A. Jones, Lewiston, Chief Engineer.

Newtonville, Mass.—The Newton Street Railway Company is considering the double-tracking of about 5 miles of its line.—M. C. Brush. General Manager.

Allegan, Mich.—The Trans-Michigan Street Railroad Company will very soon construct its proposed line, which will connect Allegan and South Haven, Mich., 30 miles; power station and repair shops will be located in Allegan City; company is in the market for rails and ties.—Wm. Pyatt. Chicago, President; Martin Flatow, Chicago, Vice-President; Frank B. Kamarke. Chicago, General Manager and Electrical Engineer. cago, Vic Chicago, Engineer

the market for rails and ties.—Wm. Pyatt. Chicago, President; Frank B. Kamarke. Chicago, General Manager and Electrical Engineer.

Houghton, Mich.—The Houghton County Traction Company is contemplating the construction of an interurban line from Houghton to Painesdale; distance, 11 miles.

South Haven, Mich.—Council has granted a franchise to the Chicago, Benton & Grand Rapids Railroad Company for the building of an electric railroad through South Haven.—Jos. W. Hosmer, Promoter.

Tiffin, Mo.—The El Dorado Springs, Tifin, Monegaw Springs & Lowry City Railroad Company is planning to begin construction within the next three months on its proposed electric railway, which is to connect El Dorado Springs, Tiffin, Oyer. Monegaw Springs, Chalklevel and Lowry City; 30 miles long; power station will be erected on the Osage River. The repair shops will be built at El Dorado Springs.—C. A. Edgar, El Dorado Springs, Mo., President; J. S. Harrison, Tiffin, Secretary and General Manager; J. W. Reeder, El Dorado Springs, Treasurer.

Springfield, Mo.—The Oklahoma & Codlen City Railway Company is considering the construction of an electric railway, connecting Springfield, Mo., Pawhuska, Okla., and Jefferson City, Mo.; overhead trolley system will be used.—Winfield S. Pope, Jefferson City, Mo., General Manager; W. K. Palmer, Kansas City, Chief Engineer.

Kearney, Neb.—The Central Western Railroad Company is considering the construction of an electric railway between Kearney and Holdredge; surveys have been completed for one section of the route and a portion of the right-of-way has been secured; contracts will not be awarded before next March: length 31 miles; capital, \$250,-000.—T. E. Brady, President; S. C. Nelson, Treasurer and General Manager; N. R. Denham. Chief Engineer, all of Omaha.

Claremont, N. J.—The Morris County Traction Co. is considering the awarding of contracts for the construction of 20 miles of new track.—F. H. Alleman, General Manager, Summit.

Brooklyn, N. Y.—The Board of Estimate and Apportionment has grant

bodies interested in the development of the north shore of Queens Borough have filed a request with the North Shore Traction Company to apply for a franchise for the construction of a new trolley line to Whitestone, to connect with its main lines; company has issued a written statement that it will be ready to build the extension not later than next summer if a franchise is granted.

Canandaigua, N. Y.—The Ontario Light and Traction Company has petitioned the Board of Trustees for an amended franchise under which to own and maintain a street surface railway.—Wm. N. Brooks, Clerk.

Board of Trustees for an amended franchise under which to own and maintain a street surface railway.—Wm. N. Brooks, Clerk.

Concord, N. C.—The Board of Aldermen has granted a street railway franchise to J. W. Barry, of Boston, Mass.; company has taken over the franchise granted the Concord Street Railway Company.

Elizabeth City, N. C.—D. G. Wilson and others are considering the construction of an electric railway from Elizabeth City to Lister's Pier.

Bowling Green, O.—The Lake Erie, Bowling Green & Napoleon Railway Company will build a 6-mile extension to its system, from Bowling Green to Tontogany.

Cadiz, O.—The Wheeling, Cadiz & Tuscarawas Traction Company has had surveys completed for this line. The following cities will be connected by the road; Uhrichsville, Dennison, Franklin, Laceyville, Cadiz, New Athens, Harrisville, Colerain, Georgetown, Adena, Martin's Ferry, Bridgeport and Wheeling, W. Va.; length, about 55 miles; power station and repair shops will be built at Cadiz.—A. E. Townsend, President and General Manager; Geo. W. Grissinger, Secretary; John E. Lacey, Treasurer, all of Cadiz, Promoters.

Dayton, O.—Council has granted the Dayton Street Railway the right to change its route by abandoning a portion and using other streets.

Kenmore, O.—Thos. L. Childs, Promoter of the Turkeyfoot Traction Company, Akron, has made application to the Council of Kenmore for a franchise.

Springfield, O.—The Washington Traction Company will extend their lines from South Charleston to Washington C. H. in the spring.

tion Company will extend their lines from South Charleston to Washington C. H. In the spring.

Bartlesville, Okla.—A second interurban electric road will be constructed and contracts for its construction are now in course of preparation; road will be laid on the abandoned grade of the old Jacob Bartles railroad, which runs south to Ochelata, ten miles distant.

Claremore, Okla.—The Perdue's Sanitarium and Street Railway Company has been organized to build a street-car line about four miles long.—W. J. Perdue, Hiram Stevens, Charles Godbey, H. Jennings and O. C. Wing, Promoters.

Oklahoma City, Okla.—The Oklahoma City, Shawnee & El Reno Rapid Transit Company has secured rights of way; estimates are being prepared and arrangements made for the financing of the road: length, 70 miles; line will extend from Oklahoma City to Spencer, Horrah, Choctaw, McCloud, Yukon, El Reno and a number of smaller towns.—W. M. Sawyers, President; C. A. Huber, Secretary; S. M. Niblo, Treasurer.

Aylmer, Ore.—The Hull Electric Company will construct two miles of new track during the coming year.

Portland, Ore.—The Clackamas Southern

ing the coming year.

Portland, Ore.—The Clackamas Southern Railway has been incorporated to build an electric railway from Oregon City to the Molalla Valley in Clackamas County with a southern terminus at Scott's Mills on Butte

Southern terminus at Scott's Mills on Butte Creek; final surveys have been secured for the line.—F. M. Swift, David Loring and A. E. Clark, Incorporators. Roseburg, Ore.—M. M. Johnson, of Port-and, is considering the construction of an electric railway between Cuss Bay and

land, is considering the construction of an Roseburg.

Columbia, Pa.—The Columbia & Manor Street Railway Company will begin active construction on its line next spring; it will be about 17 miles long and will connect Columbia, Washington Boro and other places in Lancaster County.—Henry Wertz. Washington Boro, President; H. M. H. Alderman, Lancaster, Pa., Vice-President; E. K. Hershey, Lancaster, Pa., Secretary and Treasurer; J. B. McDivitt, Safe Harbor, Pa., Chief Engineer.

Middletown, Pa.—The Royalton & Elizabethtown Street Railway will begin construction in about two months; line will connect Middletown, Royalton, Elizabethtown, Florin and Mt. Joy; distance, 40 miles; branch line will be built to Lebanon; company will adopt the overhead trolley system; power will be furnished from a station to be erected at Conewago.—Wm. Trimble, Minneapolis, Minn., President; E. M. Raymond, Philadelphia, Pa., Secretary and General Manager.

Washington, Pa.—The Washington & Canonsburg Railway Company is considering the construction of 6 miles of new track.—I. J. Duvall. Chief Engineer.

Rapid City, S. D.—Council has granted

the Rapid City & Wyoming Railway Company a franchise to construct a line.—L. A.

the Rapid City & Wyoming Railway Company a franchise to construct a line.—L. A. Richards, President.

Sioux Falls, S. D.—The Sioux Falls & Sioux City Electric Railway Company will begin construction on its projected standard-gage line this year; road will be about 90 miles in length, joining Sioux Falls, Worthing, Bensford, Elk Point, S. D., and Sioux City, Ia.; both electric and gasoline motor cars will be operated on the line company will build two power stations, one at Sioux Falls, S. D., and the other at Sioux City; capital, \$1,000,000.—O. H. Smith, President; E. D. Morcom, Secretary and Treasurer; Geo. W. Burnside, General Manager, Incorporators.

ager, Incorporators.

Johnson City, Tenn.—The Johnson City
Traction Company will add one and one-half
miles of additional track to its line during

Traction Company will add one and one-half miles of additional track to its line during the coming year.

Dallas, Tex.—J. V. Watkins, of Corsicana, and A. M. Collins and W. A. Davis, of St. Louis, have conferred with the Business Men in regard to the building of an interurban railroad from Dallas to Corsicana via Waxahachie, with a spur ten miles in length from Waxahachie to Ennis, and from Corsicana to Palestine; distance from Dallas to Palestine by the route of the proposed road, 117 miles; road will traverse a fertile and thickly settled region and connect the blackland towns with the fruit and truck growing sections of East Texas.

El Paso, Tex.—J. A. Hopper has been granted a franchise to build a street railway to the Government Hill addition from the Fort Bliss electric line.

Gainesville, Tex.—Council has granted a franchise for the construction and operation of a street railway to E. S. Alunt and C. R. Ball; construction will begin not later than April 15, 1909; distance, 4 miles; promoters will operate gasoline motor cars.

Gallatin, Tex.—The Texas & New Orleans Railroad is receiving bids for building 8 miles of track from Gallatin to Rusk, Tex.—E. B. Cushing, Engineer.

Hale Center, Tex.—The South Plains Railroad Company has been organized to build a line from Plainview, on the Santa Fe, to Hale Center and Floydada.

Pecos, Tex.—M. L. Swineheart has begun location survey for the proposed Toyah Valley Railway from Pecos to Balmorhea. Tex., and other points.

Quanah, Tex.—D. E. Decker, J. C. Marshall, M. M. Hankins and J. H. Wilson, of Quanah, Tex., are engaged on a plan to build an electric railroad from Quanah to Paducah, Tex.

Quanah, Tex.—D. E. Decker, J. C. Marsall, M. M. Hankins and J. H. Wilson, of Quanah, Tex., are engaged on a plan to build an electric railroad from Quanah to Paducah, Tex.

San Marcos, Tex.—B. G. Neighbors, of San Marcos, and Joseph Jennings, of Martindale, Tex.. are planning to begin construction of 12 miles of the proposed interprivant railway between San Marcos and Luling. Tex.

San Marcos, Tex.—An interurban line to be constructed from this city to Suling via Martindale, Fentress and Priarie Lea, is being promoted by B. G. Neighbors, of San Marcos, and Jos. Jennings, of Martindale; surveys have been made.

Salt Lake City, Utah.—Council has granted the Utah Light and Railway Company a 25-year franchise.

Pittsville, Va.—The Staunton River Railroad Company has been chartered to build a line about seven miles long from Pittsville to Brights, Vt.; capital, \$25,000. J. H. C. Barr, of Philadelphia, Pa., President; W. D. Parker, of Pittsville, Va., Vice-President; S. A. Lee, of Toshes, Va., Secretary and Treasurer, Incorporators.

Montpelier, Vt.—A bill has been introduced in the Senate to incorporate the Montpelier & Essex Junction Traction Company, which proposes to build an electric road through Berlin, Middlesex, Moretown, Waterbury, Richmond, Hinesburg, Jericho, Colchester and Underhill; capital stock, \$50,000. F. M. Corry, A. L. Hewett, Berlin; W. J. Boyce, Waterbury, and E. W. Huntley, Duxbury, Incorporators.

Centralia, Wash.—W. J. Patterson and A. Welch have been granted a franchise to build and operate an electric railway.

Cle Elum, Wash.—The Cle Elum-Roslyn Electric Railway and Power Company has applied to the County Commissioners for franchise giving them right to use the county roads between Cle Elum and Roslyn.—Frank S. Farquhar, Attorney.

Dayton, Wash.—The Columbia & Walla Walla Traction Company has been incorporated to construct an electric railway from Dayton to Wallula; capital, \$1,000,000. N. G. Blalock, President and General Manager; L. C. Davison, Secretary; George Kellough, Treasurer.

Elle

& Western Railway Company is securing the rights-of-way for its projected line, which is to extend from Spokane to Reardan, Davenport and Peach; road will be standard gage and it will be about 70 miles in length; Clyde M. Graves, Spokane, President; W. G. Davidson, Secretary; H. B. Ferris, Treasurer; A. M. Lupfer, Chief Engineer, Incorporators.

Spokane, Wash.—The Okanogan Electric Railway will begin construction in the spring upon a line from the junction of the Okanogan and Columbia rivers north along the Okanogan to a point near the Canadian line.

Tacoma, Wash.—Council has granted a franchise to the Pacific Traction Company to construct a street car line on Eighth street.

street.

Walla Walla, Wash.—The Walla Walla and Columbia River Traction Company is considering propositions for the construction of the entire road from Dayton to the river; contract will be let within a few days for the building of the entire line.

Bethany, W. Va.—The Wellsburg, Bethany & Washington Traction Company is considering the extension of the line from Bethany to Washington, Pa., a distance of about 21 miles.—F. A. Chapman, Secretary, Wellsburg.

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Wellsburg.
Glenray, W. Va.—The Glenray & Richwood Railroad, recently chartered to build
from Glenray, on the Chesapeake & Ohio
Railway, to Richwood, on the Baltimore &
Ohio, distance about 40 miles, has already
completed seven miles of grade.—F. M. Arnold.

Morgantown, W. Va.—The Morgantown and Dunkard Valley Railroad will construct he first five-mile section of the line beween Morgantown and Barker immediately.—Ami Martin, General Manager.
Wheeling, W. Va.—The local traction ompany has plans for the reconstruction of wo miles of track.
Wheeling, W. Va.—Council has referred to the Ordinance Committee ordinances ranting franchise to the City and Elmirove Railway Company for tracks on ixteenth between Market and Chapline nd to the Wheeling Traction Company for racks on Sixteenth between Market and fain.

Vancouver, B. C., Can.—The British Columbia Electric Railway Company is considering the purchase of car trucks for six equipments.

BIDS RECEIVED AND CON-TRACTS AWARDED

TRACTS AWARDED

Pueblo, Col.—The Kansas-Colorado R. R. Co. has awarded the contract for the construction of its railway, including the construction of itacks, bridges, steel equipment, power stations, overhead equipment, etc., to A. B. Hulit, Central Block, Pueblo, Col. Work has already commenced on the railway, which will extend from Canon City to Dodge City, Kan., a distance of 375 miles. Plans are now being prepared by Sargent & Lundy, Railway Exchange Building, Chicago, Ill., for one of the power houses; it has been decided to locate one of the power stations at Garden City, Kan.

Indianapolis, Ind.—The American Engineering Company has received a contract for the building of a 196-mile electric railroad from Des Moines to Sioux City, Ia.; the work is to be begun at once and calls for an expenditure of \$4.700,000.

Kilbourne, Wis.—The Central Wisconsin Transit Company has awarded the general contract for the building of the road to Burns & Co., 705 Isabella Building, Chicago, Ill. Kilbourne, Portage, Friendship and Grand Rapids, Wis., will be connected by this line. It will be about 65 miles in length. The repair shops will be located at Friendship, Wis. Capital, \$1.000,000. Headquarters, 705 Isabella Building, Chicago, Ill. J. Burns, President and General Manager. Clyde F. Burns, Secretary and Treasurer.

BRIDGES

San Diego, Cal.—Council has made an appropriation toward the erection of a bridge over Chollas Creek; estimated cost,

(5.600. Wilmington, Del.—Plans have been completed for a steel bridge to be constructed over the Baltimore & Ohio Railroad tracks at Seventh street.—D. D. Carothers, Chief Engineer, Baltimore, Md.

Engineer, Baltimore, Md.

Peck, Ida.—A company is being organized among the business men of this place to build a bridge over the Clearwater River at the Peck station.—Mr. Stewart, Promoter.

Promoter.

Aurora, III.—Council has been asked to appropriate \$70,000 for bridge construction.

Peru, Ind.—Bids will be received January for grading, draining and paving with gravel culverts and construction of bridges and arches where directed.—Chas. Griswold, County Auditor.

bunty Auditor.

Cedar Rapids, la.—Plans are being pre-

pared by G. D. Dobson, Des Moines, Engineer, for two reinforced concrete park bridges.

gineer, for two reinforced concrete park bridges.

Fleming, Minn.—Bids will be received January 18, 1 p. m., for \$10,000 bonds to be used for the construction of roads and bridges.—M. Bird, Town Clerk; E. J. Rodenberger, Chairman Board of Supervisors.

Billings, Mont.—Plans have been completed for the erection of a bridge at Laurel by Yellowstone and Carbon Counties; cost, \$15,000.

Laurel, Mont.—Yellowstone and Carbon Counties have completed final plans for the erection of a bridge at Laurel by Yellowstone and Carbon Counties have completed final plans for the erection of a bridge at Laurel by Yellowstone and Carbon Counties, cost, between \$15,000 and \$20,000.

Le Roy, N. Y.—The New York Central & Hudson River Railroad Company is preparing plans and specifications for eliminating the Stafford crossing by the construction of a viaduct.—G. W. Kittredge, Chief Engineer, New York.

Rochester, N. Y.—All bids for the erection of substructure of the River street bridge have been rejected; Commissioner of Public Works F. T. Ellwood will readvertise bids.

Troy, N. Y.—Residents in the Sixth Ward

Troy, N. Y.—Residents in the Sixth Ward are urging the construction of a bridge at the head of Mill street.—Henry Cranmer,

Chairman.

Dayton, O.—The County Commissioners have adopted a resolution providing for the construction of a steel and concrete bridge on Needmore Road; cost, \$18,000.

Huron, O.—The Osborn Engineering Company, Osborn Bldg., Cleveland, has been selected by the Eric County Commissioners to prepare plans for a draw bridge; cost, \$90,000.—R. B. Smith, County Surveyor, Sandusky.

Bartlesville, Okla—Plans on the control of the control of the county of the control of the c

Sandusky.

Bartlesville, Okia.—Plans are being prepared by Engineer C. E. De Armond for a number of small bridges, to be constructed in Washington County during 1909.—James Gordon, County Clerk.

Portland, Ore.—Plans for a new bridge across the Willamette River, constructed jointly by the city and O. R. & N. Company, have been presented to Council; proposition has been referred to City Engineer Taylor.

jointy by the chy and c. R. & Configurery, have been presented to Council; proposition has been referred to City Engineer Taylor.

Glendon, Pa.—The Northampton County Commissioners, the Borough Council, the Lehigh Valley Railroad Company and the Lehigh Coal and Navigation Company, it is stated, have decided to construct a bridge over the railroad tracks here.—W. G. Berg, Chief Engineer, New York, Lehigh Valley Railroad Company.

Harrisburg, Pa.—Chairman Young of the Railroad Committee of Council has appointed Messrs. Bell, Kuhn, Snarely, Osler and himself as a sub-committee to act with City Solicitor Seitz and City Engineed Cowden in the conference with the Reading Railroad officials about a bridge at Seventeenth street, and likewise about one at Thirteenth; City Engineer has likewise sent a communication to Councils regarding the construction of a bridge over the Reading railway tracks at Eighteenth and Derry streets; he gave two estimates of cost of bridges; the first provides for the passage of the street under the bridge, and such a bridge would cost \$75,000, exclusive of damages, second estimate provides for raising the street up to the bridge, and this sort of structure would cost the city \$105,000, exclusive of damages.

Dallas, Tex.—Complying with the resolu-

ost the city \$105,000, exclusive of damages.

Dallas, Tex.—Complying with the resolution of the Board of Municipal Commissioners of Dallas, the office of City Engineer J.

M. Preston has been steadily at work upon plans and specifications for the proposed viaduct over the Trinity and the river bottoms between Dallas and Oak Cliff; plans are those for a concrete steel-reinforced structure, whose total length will be about 3,200 feet, designed either for accommodation of the street car traffic or without It, and to cost, accordingly, not more than \$325,000 and possible as little as \$225,000.

Dallas, Tex.—All bids have been rejected for the construction of a concrete or the construction of a concrete ridge on Hall street; ones coming within appropriation of \$4,000 were not the kind of structure wanted; City Secretary J. B. Winslett will again advertise for bids.

Portsmouth, Va.—Finance Committee is contemplating appropriation of \$4,500 for construction of bridge to replace Union bridge; proposed structure is to be of concrete and pile foundation, with steel frames.

J. D. Reed, Mayor.

Bellows Falls, Vt.—The Board of Selectmen has accepted plans drawn by Engineer J. R. Worcester for a concrete bridge, to be built over the canal; cost, about \$12,000; bids are now being received.—M. H. Ray, Chairman.

Aberdeen, Wash.—Citizens on Wishkah treat will petition.

Chairman.

Aberdeen, Wash.—Citizens on Wishkah street will petition the Council to build a bridge across the Wishkah River.

Spokane, Wash.—Plans have been submitted to Council for the steel viaduct to be constructed at Washington street leading from the present Washington street

bridge at Great Northern Depot across the railroad tracks; cost, \$286,500; length, 2,395 feet.

Spokane, Wash.—Council has adopted plans for a concrete arch bridge at Monroe street, which plan contemplates a fill at the south end of the bridge and a fill a the north end of the bridge and a fill at the north end of the bridge, which, taken together, will reduce the length of the structure to 516 feet, with a central arch of 240 feet span with two approach arches each 120 feet span; estimated cost, \$344,-372.

BIDS RECEIVED AND CON-TRACTS AWARDED

El Centro, Cal.—The Board of Supervisors of Imperial county let contract to Samuel Webb, Holtville, Cal., at \$5,855, for the construction of five bridges across the New River, at points extending from north of Brawley to Storm's Crossing, near El Centro.—D. S. Elder, Clerk.

Los Angeles, Cal.—Contract for the construction of a reinforced concrete bridge across the Los Angeles River at Main street has been awarded to Carl Leonardt, city, at the following prices: For bulkhead and track protection at the east bank, \$2,000; for cement pipe furnished and placed, per linear foot, \$4; for removing and replacing rock on banks, \$500; for rip-rap furnished and placed, per ton, \$1.50; per foundation pile, furnished and driven, \$16; per cubic yard of concrete, Class A, \$7.35; per cubic yard of concrete, Class B, \$7; per cubic yard of concrete, Class C, \$8.40; for steel rods in place, \$6,000; for arch centers, \$6,000; per square yard concrete surface, tool finished, 50 cents; per cubic yard of spandrel filling, 40 cents.

Reedley, Cal.—The Supervisors have

cents; per cubic yard of spandrel filling, 40 cents.

Reedley, Cal.—The Supervisors have opened three bids for the construction of the pile bridge crossing the Kings River near here; bids were: Mervy-Elwell Co., of Oakland, Cal., \$6,100; T. A. Pettus, of Kerman, \$4,500; Pacific Construction Co., 16 California street, San Francisco, Cal, \$5,980 (awarded contract).

Sacramento, Cal.—The contract with the county for the construction of a pony truss bridge in Buckeye Valley on the Jackson road to the Jenkins & Wells Construction Company upon the bid of \$2,984.06 has been approved by the Good Roads Advisory Committee of the Chamber of Commerce. The next lowest bidder was the McGillivray Construction Company which bid \$2,985.90, or but \$1.84 below the successful bidder; other bidders were: M. B. White, Cotton Bros., Clark & Henery, the Western Bridge and Construction Company and Charles B. Sheahy; the bid of Charles Swan was irregular.

Bids for the construction of the Upper

Sheany; the bid of Charles Swan was irregular.

Bids for the construction of the Upper Stockton Road were also submitted to the Committee by the Board of Supervisors; the contract was let in three sections, each section comprising approximately eight miles of roadway. The lowest bid for the first section was the Cotton Bros. Company at \$56,411.88; for the second section, Cotton Bros. Company also submitted the lowest bid, which read \$54,747.97; the next lowest bid was that of Lewes Moreing at \$55,780.85. Lewes Moreing submitted the lowest bid for the third section, offering to build the roadway for \$61,212.80; this bid was \$1,700 less than the next lowest bid by the McGillivray Company.

way for \$61,212.80; this bid was \$1,700 less than the next lowest bid by the McGillivray Company.

Florence, Col.—Fox & Smith have contract, at \$6,489, for constructing two bridges over Sand Creek—one at Second street and the other at Fifth street.

Bridgeport, Conn.—Snare, Trieste & Co., of New York City, have been awarded the contract for the construction of the new rolling lift steel bridge across the Pequonnock River at Congress street at the approximate price of \$305,000; the successful bidders agree to complete the bridge in ten months and work will be begun at once; when the bids were opened on December 15 the O'Brien Construction Company of New York was the lowest bidder; with this company were associated a number of local contractors represented by Toole & Sunderlin, and it is stated that the O'Brien Company injured its chances by its treatment of the local contractors, for as soon as the contract was evidently within the grasp of the O'Brien Company the local contractors who had done all of the figuring and had taken Mr. O'Brien in on the bid feared they were in danger of being shut out. The bid of Snare, Trieste & Co. was the second lowest as originally submitted and E. A. Sandford & Co., of New York third; on the original calculation the successful bidder was \$5,000 higher than the O'Brien Company, while the Sandford bid was \$20,000; more than the figures quoted by O'Brien. Senator Moses W. Manwaring said, as the contract is figured on the unit basis, it is hard to quote figures; the bridge will cost approximately \$305,000, which includes everything—the paving of the approaches, the royalty of \$4,500 to the Scherzer Rolling

Lift Bridge Company and all other ex-

Lift Bridge Company and all other expenses.

Coeur d'Alene, Idaho.—The Board of County Commissioners has awarded contracts for the construction of a bridge at Fernwood and one at St. Maries to Carscallen Bros.; the bids were as follows: For the Fernwood bridge, Gilbertson, \$1,320; Goddard, \$1,805; and Carscallen, \$1,450; and for the St. Maries bridge: Gilbertson, \$1,570; Goddard, \$2,092, and Carscallen, \$1,370.

Indianapolis, Ind.—H. F. Hackedorn was the lowest bidder for building a new bridge across Lick Creek, in Wayne Township; the bid was \$4,180; lowest bids for other contracts were as follows: Repairs on the Three-Notch road, \$1,340, J. E. Sullivan; retaining wall along White River near Morris street, \$192 for each section of eight feet, Marion County Construction Company.

Vincennes, Ind.—The Daviess County Commissioners have awarded the contract to the Vincennes Bridge Co., city, for the construction of 20 bridges in the county, at \$6,000.

Washington. Ind.—Vincennes Bridge

construction of 20 bridges in the county, at \$6,000.

Washington, Ind. — Vincennes Bridge Company, Vincennes, Ind., has contract, at about \$6,000, for constructing eight bridges for Davies County.

Independence, Kan.—The Board of Commissioners of Montgomery County has let contract to the Standard Bridge Company, Kansas City, Mo., at \$7,106, for the construction of a steel bridge.—E. H. Stewart, County Clerk.

Paducah, Ky.—City has accepted plans and specifications by City Engineer L. A. Washington for building a culvert across Bradshaw Creek and awarded contract, at \$4,925, for construction, to George Weikel, Paducah. Bradshav \$4,925, fo Paducah

Mankato, Minn.—Council has awarded contract to the Hennepin Bridge Co., Minneapolls, for the construction of a second bridge across the Minnesota River at \$23,-

contract to the Hennepin Bridge Co., Minneapolis, for the construction of a second bridge across the Minnesota River at \$23,900.

Missoula, Mont.—The County Commissioners have awarded contract for the Higgins avenue bridge to the Burrell Bridge & Construction Company.

Lisbon, O.—The County Commissioners have awarded contract for constructing superstructure of a steel bridge over Nancy's Run in Franklin Township to the Central Concrete Constr. Co., of Canton, and abutments to Thos. Watson of Minerva.

Hobart, Okla.—The Midland Bridge Company, Gibraltar Bidg., Kansas City, Mo., was awarded the contract by this (Kiowa) county to construct twelve steel and wooden bridges.

Morrisville, Pa.—The County Commissioners have awarded the contract for constructing the new bridge over the canal here at Bridge street to Carl R. Camp, of Bethlehem, Pa., at \$9,894.

Standing Stone, Pa.—The Bradford Countract for the construction of the new bridge to the York Bridge Co., York, the lowest bidders of the six concerns, at \$36,899.

Memphis, Tenn.—The Legislative Council received four bids for the construction of the iron and concrete bridge over the Southern Railway tracks on Monroe avenue, as follows: Southern Construction Co., \$12,088; Gardiner & Howe, \$9,485; J. A. Omberg, Jr., \$14,930; Memphis Bridge Co., \$11,998, with an allowance of \$585 for the material in the old bridge. J. H. Weatherford, City Engineer.

Colfax, Wash.—The County Commissioners recently let contracts for the eight new steel bridges advertised to J. I. Bailey & Co., of Wenatchee; the lump sum for the construction of the eight bridges is \$19,751.

Everett, Wash.—Charles G. Seeley, the Denver contractor, was the low bidder on construction of the eight bridges is \$19,751.

Everett, Wash.—Charles G. Seeley, the Denver contractor, was the low bidder on construction of the eight bridges across the Pilchuck above Snohomish; the structure will have a span of 100 feet; the bids opened by the County Commissioners were as follows: S. G. Seeley, \$2,447; Puget Sound Bri

MISCELLANEOUS

Florence, Ala.—City will hold an election soon to vote on \$75,000 bonds.
Sulphur Springs, Ark.—Sulphur Springs Electric Light Company is considering the erection of a 10-ton ice plant.—W. R. West,

President.

San Francisco, Cal.—The Board of Supervisors has received resolution providing \$10,000 to defray the expense of preparing plans and specifications for the new City and County Hospital buildings.

Santa Paula, Cal.—Plans for a City Hall and Public Library building have been finished by J. C. Austin, Los Angeles, Architect.

Bridgeport, Conn.—The Board of Park Commissioners has asked for an appropri-

ation of \$250 in order that a Consulting Marine Engineer may be hired to study the development of the island addition to Seaside Park and advise the Commissioners as to the proper plan to pursue; \$500 is asked to make a start toward the establishment of suitable playground facilities, and \$200 to do something towards placing suitable signs on the trees of the park.

Fitzgerald, Ga.—Ben Hill County Commissioners will open bids about January 25 for erection of jail building recently mentioned; brick structure; 40x40 feet; ordinary and fireproof construction; hot-air heat; electric lighting; cost, \$12,500; plans by J. R. MacEachern, 75 West Peachtree St., Atlanta, Ga.

R. MacEachern, 75 West Peachtree St., Atlanta, Ga.
Chicago, III.—Bids will be received until January 6 by John J. Hanberg, Commissioner of Public Works, for furnishing and delivering to the city 15,000 %-inch, 300 1-inch, 100 1¼-inch, 200 1½-inch and 300 2-inch corporation ferrules.

Anderson, Ind.—Madison County is having plans prepared for the erection of a \$100,-000 jail and jailer's residence.

Mason City, 1a.—Council is considering the erection of a City Hall; cost, \$50,000.

Newton, 1a.—Plans are being prepared by Proudfoot & Bird, Des Moines, Architects, for a \$150,000 Court House for the Jasper County Board.—Frank Sellman, County Auditor, Newton.

Orange City, Ia.—The citizens have voted to erect a \$15,000 jail.

Independence, Kan.—Plans are being prepared by Architect F. N. Bender for a City Hall; cost, \$35,000.—J. D. Kramer, City Clerk.

Gay Head, Mass.—A petition has been

Clerk.

Gay Head, Mass.—A petition has been circulated by Daniel Flanders of Chilmack to ask the Legislature for an appropriation of \$20,000 for deepening the channel of the Menemsha Creek.

Holyoke, Mass.—Superintendent Kirkpatrick urges the Water Commissioners that some action should be taken looking to carrying out the recommendations of the State Forester regarding the forestation of the water sheds; Superintendent also suggested that he be given power to secure prices on Forester regarding the forestation of the water sheds; Superintendent also suggested that he be given power to secure prices on the trees; he said that he would suggest that some eight or ten acres be planted; according to the State Forester, the cost of the trees will be about \$4.50 an acre; trees that he recommends are small and cost about \$4.50 per 1,000; Superintendent Kirkpatrick has been instructed to get prices on the trees and report back to the Board in time to allow for the arrival of the trees for planting in the spring.

Lawrence, Mass.—E. W. Grene, of Massachusetts avenue, North Andover, has granted to the city an island in the Shawsheen River, near Den Rock, 300 feet long and 50 feet wide, for park purposes.

Bay City, Mich.—Fremont B. Chesbrough, of Boston, a former resident of this city, has granted the city a handsome public park on the west side of the river.

Bay City, Mich.—A. V. Powell, Civil and Marine Engineer, Chicago, has been selected by the Park Commission to make up specifications and estimates for a dock line retaining wall on the riverside park front; preliminary estimates run from \$50,000 to \$75,000.

Salo, Minn.—Bids will be received January 20 for \$6,000 worth of bonds.—John E. Snoja, Town Clerk of Salo, Grayling, Aitkin County.

Columbia, Mo.—A proposition is now

Salo, Minn.—Bids will be received January 20 for \$6,000 worth of bonds.—John E. Snoja, Town Clerk of Salo, Grayling, Aitkin County.

Columbia, Mo.—A proposition is now under consideration for the construction of a park to include a large lake, formed by building a dam across a creek between two bluffs. The dam will be about 400 feet long and 30 feet high and will back the water up to form a lake a mile long and varying from 400 to 600 feet wide. It will be about 2½ miles from Columbia and is to be connected to Columbia and is to be connected to Columbia and is to be connected to Columbia a park work.—Turner Gordon. of Columbia, is Chief Promoter.

Kansas City, Mo.—City has approved plans submitted by Walter P. Bermingham for the comfort station; \$15,000 has been appropriated.

St. Louls, Mo.—City is considering the erection of four new wings to the City Hospital; cost, \$900,000.

Asbury Park, N. J.—Council has decided to issue bonds for \$125,000, of which \$75,000 will be used for beach improvements, \$35,-000 for a septic sewer plant in compliance with directions of the State Board of Health and \$15,000 for the Fire Department; the beach improvements will comprise a hot and cold sea water plant, with swimming pool, at Second avenue, to be completed in time for next season.

Jersey City, N. J.—The Street and Water Board will advertise for offers and then let out part of the city's wharf rights at the foot of the Hackensack River to the party making the most advantageous terms.

Newark, N. J.—The Board of Health and the Committee on Finance have recommended that a new automobile ambulance be purchased for City Hospital.

Newark, N. J.—Park Engineer Reynolds is preparing plans for a shelter to be erected in Eagle Rock Park by the Essex County Commissioners; cost, \$25,000.

New York, N. Y.—Bids will be received January 7 for erecting a shelter house in McLaughlin Park, Borough of Brooklyn; security, \$30,000.—Henry Smith, President of Commissioners of Parks.

Rochester, N. Y.—The Public Improvement Committee of Council is considering the erection of comfort stations; plan is to build two for experiment; \$25,000 may be appropriated.

the erection of comfort stations; plan is to build two for experiment; \$25,000 may be appropriated.

Syracuse, N. Y.—Citizens are urging various improvements in Burnet Park; four buildings, more drinking fountains and the development of the south end of the park are among the things asked.

Enfield, N. C.—R. R. Bulluck, Enfield, N. C., wants molds for making underdrain tilling of cement.

Cincinnati, O.—Plans are being prepared by E. H. Dornette, Architect, for a comfort station at Eden Park, for the Board of Public Safety; cost, \$12,000.

Cincinnati, O.—Council has passed an ordinance to appropriate property in Central avenue opposite Linn street, whereon to erect a building to be used as a public bath house.

Cleveland, O.—Architect J. Milton Dyellowers.

Cleveland, O.—Architect J. Milton Dyer has prepared plans for a new City Hall to be erected at a cost of \$2,600,000; the Trustees of the Art Museum will spend \$1,000,000 in the construction of a building in Wade Park.

Trustees of the Art Museum will spend \$1,000,000 in the construction of a building in Wade Park.

Columbus, O.—Business men are urging the erection of arches on West Broad street from High street to the bridge.—W. N. Miller, P. H. Kaiser and Henry Linke, Committee.

Lima, O.—City is considering the erection of a tuberculosis hospital, at a cost of \$40,000.

Youngstown, O.—Plans have been prepared by Owsley, Boucherie & Co., Wick Bank Bilg., Architects, for a jail building.

Ardmore, Okla.—City will vote on \$25,000 bond issue for parks and boulevards.

Shawnee, Okla.—City will vote on \$25,000 bond issue for parks and boulevards.

Shawnee, Okla.—T. J. Peters is preparing plans for the convention hall and hospital; cost, about \$70,000.—F. P. Stearns, Mayor.

Tulsa, Okla.—Council is considering \$25,-000 bond issue of parks and a \$10,000 issue for a storage building.

Portland, Ore.—Council has authorized dock bonds amounting to \$500,000.

Chambersburg, Pa.—Council is considering the remodeling of the market house into a City Hall.

Harrisburg, Pa.—City is considering purchase of an electric ambulance.

Lebanon, Pa.—Council will be asked to provide uniforms for the fire police, to include rubber coats and boots and other necessary apparel.

Philadelphia, Pa.—Council has passed an ordinance granting a franchise to the Delaware Tunnel Railroad Company; beginning at Market and Second streets, on the Philadelphia side, the south tube will extend from Third street, in Camden, diagonally to the river front, thence diagonally to Second and Arch streets, on the Philadelphia side; it will then curve in Second street to the south to join the first tube at Market street; combined mileage, about four miles.

Wapwallopen, Pa.—The County Commissioners are considering the erection of a bridge over the Susquehanna River at Wapwallopen, Pa.—The County Commissioners are considering the erection of a bridge over the Susquehanna River at Wapwallopen, St.—The Ways and Means Committee has recommended an appropriation of \$25,000 for the p

Sturgis, S. D.—Bids will be received January 6 for furnishing material and constructing a steel wagon bridge across Belle Fourche River, Township Five.—Arthur P. Schnell, County Auditor.

Knoxville, Tenn.—Citizens are urging a bond issue of \$50,000 to establish small parks or breathing spots in all of the wards in the city and one large park outside of the city.

Knoxville, Tenn.—Mayor J. M. Brooke in

wards in the city and one large park outside of the city.

Knoxville, Tenn.—Mayor J. M. Brooks, in the name of the Park Association, has secured an option on 297 acres of land to be used as a city park; the Board of Public Works will ask a special appropriation of \$\frac{1}{2}\times \text{.}\$ to take care of the 15 miles of paved streets during next year.

Knoxville, Tenn.—City is considering construction of a work house; a rock crusher and other equipment may be purchased.—J. W. Flerunken, Chairman, Board Public Works.

Works.

Memphis, Tenn.—Trustees City Hospital will, it is reported, ask City Council for appropriation to build annex to hospital, to cost about \$16,000, exclusive of plumbing, heating and lighting; it is also further contemplated to establish light and cold-storage plants.

age plants.

Memphis, Tenn.—City contemplates es-

tablishment of cold-storage plant at City Hospital.—Address the Mayor.

Ballinger, Tex.—City is considering erection of a City Hall.

Sanderson, Tex.—E. McGinley, El Paso, Tex., is promoting a company for the establishment of ice factory, electric light plant and water works system.

Dallas, Tex.—A lift bridge will be constructed over Trinity River at Zangs boulevard; cost, \$15,000.

Waco, Tex.—Dr. T. V. Taylor, Professor of Civil Engineering at State University, has recommended varlous improvements to be made to Brazos River suspension bridge, which will enable city trolley system to use structure; improvements include complete renewal of stiffening truss, replacing of all hangers and wind ropes by new and larger wires, wind ropes to be permanently anchored to iron bed plates built into masonry or concrete walls, etc.; Council is considering the recommendations.

North Yakima, Wash.—Mayor H. H. Lombard has announced that Judge Adams, of Bellingham, would soon appear before the City Council and ask for a franchise to build and operate a refrigerator system in this city.

Seattle, Wash.—The Riverton and South End Improvement Clubs are urging the

build and operate a reinigerator system and this city.

Seattle, Wash.—The Riverton and South End Improvement Clubs are urging the widening, deepening and straightening of the Duwamish River.

Vancouver, Wash.—City is considering the erection of a new City Hall.

Ottawa, Can.—Tenders are being received by the Mayor until January 21, noon, for \$966,940 4 per cent. bonds.

Vancouver, B. C., Can.—Cittzens will vote on \$1,362,000 bond issue in January.

BIDS RECEIVED AND CON-TRACTS AWARDED

TRACTS AWARDED

Ft. Morgan, Ala.—The following are the bids opened on December 24 by Major H. Jervey, Corps Engineers, U. S. A., for constructing a sea wall at Ft. Morgan: Richard M. Murphy, New Orleans, La., \$267,627; Chas. Clarke & Co., Galveston, Tex., \$284.384; Robt. C. Storrie, Pensacola, Fla., \$272.181; W. C. Spotswood, Mobile, Ala., \$290,020; Christie & Lowe, New Orleans, La., \$250,440; Blackstaff Eng. Co., Philadelphia, Pa., \$270.535; Chas. G. Ollinger, Mobile, \$280,750. Following are the details of the low bid of Richard M. Murphy: 6,700 cubic yards concrete, 66.16; 38,500 tons rip-rap, hand piling, \$3.85; 27,500 cubic yards excavation, 40 cents; 1,908 M. feet sheet piling, \$35; 1,600 linear feet round piling, 20 cents; 200 linear feet vitrified pipe, 15 cents; extra cement, per barrel, \$2.50.

San Bernardino, Cal.—Bids of three constructions for diverging the 100 feet cheaved.

1,908 M. feet sneet phing, \$50, 1,000 linear feet round piling, 20 cents; extra cement, per feet round piling, 20 cents; extra cement, per barrel, \$2.50.

San Bernardino, Cal.—Bids of three contractors for dredging the 100-foot channel leading from the turning basin to the foot of Canal street were opened by the City Trustees of Wilmington, the North American Dredging Company securing the award at from 10 to 15 cents per yard; the North American Dredging Company also submitted a bid for the whole work for 11.86 cents per yard, which, taking the engineers' estimate of 787.315.9 cubic yards as the amount to be dredged amounts to \$93.375.6; as the amount of bonds voted for the work is only for \$55,000, there is some doubt as to the right of the Board to let the contract for all of the sections until another issue of bonds has been voted. Contract for the Wilmington work calls for commencement within 35 days and completion within 10 months.

Washington, D. C.—The following bids were received and opened December 17 by the Superintendent of Construction, National Museum, for pipe, fittings and valves for the New National Museum: Walworth Mfg. Co., Boston, Mass., \$8,293; Wallace Stebbins' Sons, Baltimore, Md., \$8.210; M. W. Kellogg & Co., Jersey City, N. J. (three bids), \$7,916, \$8,142 and \$7,525; Bridgman Bros. Co., Philadelphia, Pa., \$6,699, and Crane Co., Chicago, Ill., two bids, \$7,166 and \$7.292.

Summerville, Ga.—The citizens of Chattanooga County are stated to have voted

Co., Chicago, Ill., two bids, \$7,166 and \$7,292.

Summerville, Ga.—The citizens of Chattanooga County are stated to have voted to issue \$55,000 bonds for the erection of a court house. The contract for erecting same has recently been awarded to the Fall City Constr. Co., of Louisville, Ky., for \$55,000.

Chicago, Ill.—Alderman Taylor, Chairman of the City Hall Committee, wants Italian marble for the new city building, while Alderman Snow wants the cheaper domestic marble for the finishing; all went over; the lowest bidders recommended by Alderman Taylor were: Marble, John Pierce Company, \$471,000: refrigerators, Carbondale Machine Co., \$6,975; pneumatic tubes, United States Service & Tube Company, \$1,795; furnaces and grates, Green Engineering Co., \$6,210.

\$6,210.

Ft. Wayne, Ind.—Contracts are to be let to Burton and Reginald McKinley for the collection of a part of the city garbage next year, and to David N. Winburn for the remainder of the work.

Indianapolis, Ind.—The Board of Public

Safety has let a contract to the Indianapolis Motor Car Company for an automobile patrol wagon for the Police Department; it will cost \$2,000; the wagon decided on was a Rapid, manufactured by the Rapid Motor Vehicle Company, of Pontiac, Mich., and is similar to the one now in service. When the two cars are in service, the horse-drawn wagons probably will be put out of commission.

The Board also signed contracts with the Indianapolis Telephone Company and with the Central Union Telephone Company for telephones for the police and fire departments and city dog pound for next year. The former company will receive \$1,450 and the latter \$2,050.

A contract was also let to the Belt Elevator and Feed Company for supplying hay and oats to the police and fire departments and the dog pound for the next three months. The contract price was \$13 a ton for No. 1 timothy hay and 56 cents a bushel for No. 2 white oats.

Alexandria, La.—The City Board of Aldermen received the following bids for the erection of new City Hall: Constantino, Reis & Garen, New Orleans, \$79,990; Carl A. Nelson, Kansas City, \$53,348; James Stewart & Co., New Orleans, \$71,000; Rubush Dabbs Construction Company, Meridian, Miss., \$64,211.39; C. D. Stewart, Baton Rouge, \$60,310; Southern Building Company, Louisville, Ky., \$52,697; W. R. Stewart, Little Rock, \$67,700; Hugh McLellan, Little Rock, \$85,500; the four lowest bids were retained for consideration and another meeting will be held at which the architect, George R. Mann, will be present. Bridgeport, N. J.—Sixteen bids were received for the proposed new County Building Commposed of George Reeves, Jeremlah N. Ogden and Frank K. Muta, with Assistant District Attorney Walter H. Bacon; the bids were according to the plans and specifications prepared by Watson & Huckle, Architects. The first figures are upon this certain design and most of them submitted bids upon five other propositions which allow for changes in certain materials used in trimmings, etc. They also put in the cost to be added for the Tra

No. 5 is the bid if "economy stone" is used.
Following are the sixteen bids:
1—B. Ketcham & Son, \$91,980. No. 1, \$97,765: No. 2, \$102,177; No. 3, \$96,595; No. 4, \$91,225; add \$640 or \$800.
2—J. Myers & Sons—\$107,710. No. 1, \$112,710: No. 2, \$112,893: No. 3, \$111,813; No. 4, \$197,010; No. 5, \$110,363; No. 6, \$106,-760. Add \$739 or \$820.
3—James G. Deak & Co.—\$89,442. No. 1, \$95,392; No. 2, \$99,194; No. 3, \$95,397; No. 4, \$89,442; No. 5, \$94,079. Add \$640 or \$800.

1, \$95,392; No. 2, \$99,194; No. 3, \$95,397; No. 4, \$89,442; No. 5, \$94,079. Add \$640 or \$800.

4—Horace B, Deal Co.—\$89,997. No. 1, \$95,757; No. 2, \$100,567; No. 3, \$104,112.70; No. 4, \$98,492.70. Add \$847 or \$1,007.

5—Mark P. Wells—\$88,877. No. 1, \$93,-607; No. 5, \$92,060; No. 6, \$89,660. Add \$640 or \$700.

6—George A. Glenn & Co.—\$87,300. No. 1, \$92,270; No. 2, \$96,650; No. 3, \$92,000; No. 4, \$86,800. Add \$820 or \$380.

7—Edward Fay & Son—\$95,947. No. 1, \$92,270; No. 2, \$96,050; No. 3, \$92,000; No. 4, \$86,800. Add \$820 or \$380.

8—Cramp & Co.—\$91,759. No. 1, \$96,664,64; No. 2, \$101,164; No. 3, \$99,990; No. 4, \$94,990; No. 5, \$98,990. Add \$662 or \$745.

8—Cramp & Co.—\$91,559. No. 1, \$96,464; No. 2, \$101,164; No. 3, \$96,059; No. 4, \$90,-559; No. 5, \$94,859. Add \$700 or \$765.

9—Thompson & Stiles—\$99,853. No. 1, \$107,853; No. 2, \$112,500; No. 3, \$104,740; No. 4, \$11,144; No. 5, \$103,049. Add \$680 or \$840.

10—Walter Titus—\$82,000. No. 1, \$87,-500; No. 2, \$93,000; No. 3, \$87,200; No. 4, \$81,300; No. 5, \$84,100. Add \$672 or \$745.

11—Sax & Abbott Construction Co.—\$99,-800. No. 1, \$107,800; No. 2, \$113,752; No. 3, \$103,903; No. 4, \$98,975; No. 5, \$109,485. Add \$415 or \$556.

12—J. E. & A. L. Pennock—\$92,400. No. 1, \$93,158; No. 2, \$104,099; No. 3, \$96,663; No. 4, \$92,170; No. 5, \$91,734. \$93,072 or \$93,145 with heating.

13—H. H. Hankins—\$83,880. No. 1, \$89,-200; No. 2, \$94,475; No. 3, \$88,693; No. 4, \$93,158; No. 2, \$104,099; No. 3, \$96,663; No. 4, \$92,170; No. 5, \$91,734. \$93,072 or \$93,145 with heating.

13—H. H. Hankins—\$83,800. No. 1, \$89,-200; No. 2, \$94,475; No. 3, \$88,693; No. 4, \$93,072 or \$93,145 with heating.

13—H. H. Hankins—\$83,800. No. 1, \$94,000; No. 2, \$99,400; No. 2, add \$17,380. Add \$50 or \$712.

15—Lynch Bros.—\$89,000. No. 1, \$94,000; No. 2, \$99,400; No. 3, \$93,400; No. 4, \$88,-270; No. 5, \$90,000. Add \$630 or \$702.

16—Joseph Steelman—\$91,4477. No. 1,

add \$10,30; No. 2, add \$17,30. Add \$350
or \$712.

15—Lynch Bros.—\$89,000. No. 1, \$94,000;
No. 2, \$99,400; No. 3, \$93,400; No. 4, \$88,270; No. 5, \$90,000. Add \$630 or \$702.

16—Joseph Steelman—\$91,437. No. 1,
\$99,959; No. 2, \$106,297; No. 3, \$96,927; No.
4, \$90,027; No. 5, \$88,395. Add \$650 or \$800.

Brooklyn, N. Y.—The contract for the disposal of ashes in Brooklyn, formerly held by the B. R. T., has been taken over by the Borough Development Company, which has established seven scow stations—five on the East River, one on Gowanus Canal and one on Newtown Creek; the ashes collected furthest from the water will be distributed by the Long Island Railroad Company.

pany. William T. Donovan is President, Charles Crawford, Vice-President, and exsheriff Frank D. Creamer, Treasurer.

New York, N. Y.—Bridge Commissioner Stevenson can go ahead on his own initiative and take charge of the building of the foundations for the new Municipal Building according to an opinion from the Corporation Counsel, and he has awarded the contract for the building of the foundations to the J. H. Gray Company for \$697,000, this firm being the lowest bidder; it is expected, however, that before work is actually begun there may be a delay, as the Commissioner is fearful that injunctions will restrain him from executing the contract. There were ten bidders for the work, and after bids were opened the Bridge Commissioner asked the Bureau of Buildings for its formal approval. It was refused on engineering grounds. The engineers of the Bureau held that the natural foundation, which is not rock, would not stand the weight of a building twenty-five stories in height. Engineers for the Bridge Commissioner, as he had been made responsible for the construction of the building under special act of the Legislature, then asked the Corporation Counsel for an opinion as to his right to proceed with the work without the Bureau's approval. Mr. Stevenson said that he would employ outside expertengineers to make tests before the work is begun.

Niagara Falis, N. Y.—Charles E. Fraser

said that he would employ outside expert engineers to make tests before the work is begun.

Niagara Falls, N. Y.—Charles E. Fraser & Company, of New York City, have been awarded contract to build the proposed elevator on the State Reservation for \$103, 587, the work to be completed within 155 working days; as soon as the contract is drawn up and signed by the contractors and the Board of Reservation Commissioners, work will begin; the successful bid was the only one that came within the prescribed appropriation of \$104,500; the other two bidders were W. J. S. Cowdrick & Co., city, who bids \$123,895 for 190 days and Morris Kantrowitz, of Albany, at \$126,-000 for 400 days. On December 4 these same bidders made the following tenders under the unmodified plans: W. J. S. Cowdrick, \$127,751 for 200 days; C. E. Fraser, \$166,082 for 175 days and M. Kantrowitz, \$182,422 for 500 days. R. D. McPherson represented the State Architect.

Paineaville, O.—The Board of Public Safety has let contracts for constructing a police station.

Philadelphia, Pa.—For Municipal Band concerts during 1909, A. Frank Bergey, who had last year's contract at \$12,900, was slightly underbid; these are the new bids: A. Frank Bergey, \$13,364; Andrew Landenberger, \$12,670; W. Reginald Herbert, \$13,400; Edward Brinton and Adolph Hirschers, each \$13,362; S. E. Hummel, \$13,665; Henry Kloetz, \$13,700; Owen J. W. Burness, \$13,850, and Andrew Luck, \$14,000.

Madison, Wis.—The Modern Steel Structural Company of Waukesha was awarded the contract for furnishing the steel for the south wing and part of the central portion of the new Capitol of Wisconsin; the contract carries business amounting to \$79,009.73.

MUNICIPAL APPLIANCES

A Big Load for a Dump Wagon THE Kramer Wagon Company has for fifty years been building wagons, chiefly for use in rough, hilly countries, such as the oil fields of Western Pennsylvania

and West Virginia; but, as the capacity of their plant was taxed to supply the demand for these wagons, they were unable to go into the dump wagon business, although realizing the great and increasing demand which there was for these.

Recent developments, however, have made it possible for them to engage actively in the manufacture of a dump wagon, which they call the "Oil City," which is the result of many years of the most careful and scientific experiments and tests. It is but natural for manufacturers to think that their product is the best, the strongest, the most uct is the best, the strongest, the most clever in design and make other similar claims; but knowing that dump wagon users want positive proof, instead of statements of quality and strength, the Kramer Wagon Company, through its superintendent, W. J. Kramer, Jr., decided to make a test of their wagon which would prove beyond all question that the "Oil City" wagon had all the qualities claimed for it. Every practical dump wagon man knows that subqualities claimed for it. Every practical dump wagon man knows that subjecting a wagon to a test, with the wagon in actual service, is the kind that counts. Realizing this fully, Mr. Kramer took a I I-2-yard wagon from stock and fitted an extra box on it, stock and fitted an extra box on it, making the total capacity five yards. This box was then filled with sand freshly dug from the bank, and three heavy teams were hitched to the wagon. One of the hind wheels, however, had settled so deeply in the road, owing to the immense load, that in spite of the best efforts of these six big horses, pulling with all their might—a test which of itself is truly remarkable—the load could not be moved. The wheel was then jacked up, a heavy plank slipped under it, and with this assistance the horses were able to start the load. Up the hill they went on the jump, not daring to stop went on the jump, not daring to stop but once—to have a picture taken—for fear the load could not be started again. The load was then drawn over two miles through the city to the scales of the McCollum Lumber Company, where it was found that the load and wagon weighed 13,960 pounds. It was then taken to another part of the city, crossing in its course five or six rail-road tracks and other equally rough sections of road, and dumped. A thorough investigation, made as soon thereafter as possible, failed to disclose a single crack, break or defection of any kind whatever in any part. The Kramer Wagon Company states its confidence that this test offers the most convincing evidence that the "Oil City" will stand up to every use to which a dump wagon may be subjected.





TRADE NOTES

Cast-iron Pipe.—Chicago: Onotations: 4-inch, \$27; 6 to 12-inch, \$26; 16-inch and up, \$25. Birmingham: Market is quiet and business is generally suspended for annual inventories. Quotations: 4 to 6-inch, \$25; 8 to 12-inch, \$24; over 12-inch, average \$23. New York: Inquiries for spring delivery are excellent. Quotations: Carload lots, 6 inch \$2476.

York: Inquiries for spring derivery are excellent. Quotations: Carload lots, 6-inch, \$24.50 at tide water.

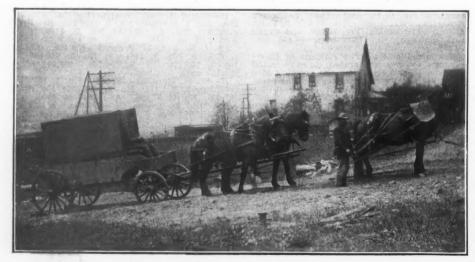
Lead.—New York: Soft Missouri has ben sold for 4.15c.; desilverized lead is firm at 4.20c. St. Louis: Market is

lower at 4c. to 4.05c.

Pipe Foundry.—The Lynchburg
Foundry Company, H. E. McWare, President, which owns and operates the McWane Pipe Works at Lynchburg, Va., and the Radford Pipe Works, Radford, Va., has purchased 23 acres of land at Norfolk, with deep water frontage of 732 feet, and belt line railway connections, on which to build a modern pipe foundry

for export and coastwise trade.

Concrete Poles.—In continuance of Concrete Poles.—In continuance of the declared policy of the Pennsylvania Railway to provide against timber scarcity, the lines west of Pittsburg have completed and placed in experimental service a line of concrete telegraph poles through New Brighton, Pa. Its construction followed a series of experiments which have been made during the last two years. Owing to the fact that wooden poles are conthe fact that wooden poies are constantly becoming more expensive and more difficult to obtain, the Pennsylvania, in 1906, began to test the value of concrete as a substitute for wood. Fifty-three reinforced concrete poles the fact that wooden poles are conwere set up near Maples, Ind. A year later they were giving entire satisfaction and showed no evidence of decay. The poles at New Brighton are of graceful proportions, being about 30 feet long, 14 inches in diameter at the bottom and six inches at the top. Their general appearance is particularly pleasing on account of the uniformity in size, shape and color.



DRAWING MAMMOTH LOAD IN OIL CITY WAGON

Fire Engine Test.—A trial of a Second Size Universal Engine manufactured by the Nott Fire Engine Company, Minneapolis, Minn., was recently held in the presence of the city officials of Norfolk, Va. In 8 minutes and 35 seconds a steam pressure of 140 pounds was produced. The fire was kindled was produced. The fire was kindled with the boiler cold and two gauges of water on. The engine was taken to the Confederate monument, on Commercial place, where a stream nearly 200 feet high was shot into the air, clearing the shaft by a good margin. The Bank of Commerce building is 165 feet high, and the stream reached higher than the skyscraper. With a water pressure of 115, and the steam pressure 120, two lines of hose 100 feet in length into a turret nozzle one inch and a half, with a smooth bore nozzle, the stream shot higher than the monu-With two lines of hose 200 feet in length, two and one-half inches in diameter and an inch and one-half in size, the water pressure at 175 and the steam pressure at 125, a similar test was made. Through two lines of hose with a Siamese coupling and a one and one-half inch nozzle, the stream was sent bounding beyond the tip top of the granite shaft and the bronze figure. If a fire had been on the top of the Bank of Commerce building the stream would have easily reached the blaze, a distance of nearly two hundred feet. The engine is pronounced by all who witnessed the tests to be of the very latest and best models. It can be made to speed 450 revolutions per minute without vibration. In this second size "Universal" Nott engine, with the throttle and exhaust wide open, there is slight vibration, thereby lessening the wear and tear of the machinery.

Water Filters.—Hungerford and Terry, Filtration Engineers, Pennsylvania Building, Philadelphia, Pa., manufacture pressure and gravity filters, continuous and intermittent water soft eners and plants for the removal of iron from water. The pressure filters are used where there is a water pressure of over five pounds and are direct connected to the mains. They are suit-able for public buildings. Their gravity filters are for use where the head is low, where preliminary sedimentation necessary and, generally speaking, for all quantities of water exceeding 500,000 gallons per day. A preliminary treat-ment with alum and sedimentation in a town are frequently necessary. Either revolving rakes or compressed air are used to assist in washing the sand. Brass sand valves or strainers of special construction are used. They are made of spring bars ½ inch in thickness. Each valve has a one-inch outlet for the filtered water and has ports or slots for its entrance 1/40 inch in width, or considerably finer than the finest sand used. This valve is so constructed that the internal pressure of the wash water causes the side walls of the valve to bend outwards slightly but on ceasing the wash they return to their normal position. As the ports lie between the side walls and the top and bottom plates, any substance that may have lodged in the ports is submay have lodged in the ports is subjected to a grinding motion which carries it through. If, as is often the case when washing with unfiltered water, any considerable amount of matter is carried into the ports, the increased pressure causes the top and bottom plates to bend slightly at the same time, thus slightly widening the same time, thus slightly widening the ports and permitting the immediate discharge of the obstruction.

Tungsten Fixtures .- The Benjamin Electric Manufacturing Company, 42 West Jackson boulevard, Chicago, Ill., manufactures a fixture for tungsten lamps which presents a pleasing appearance, and is designed to show these lamps at their best. One of the most important features in connection with it is the fact that it may be equipped with a grouping switch operated by a pull-chain, by means of which the lamps can be controlled in sets of any desired number, making it possibe to burn as many as one wishes at any given time by merely using the switch.

Rubber Tires.—Two new devices are exhibited by the Firestone Tire and Rubber Company at the Grand Central Palace Show, New York City. One is the Firestone demountable rim which may be used in connection with clincher or quick detachable tires and consists of three parts: channel rim, locking ring and demountable portion containing the tire. It has no narrow wedge shapes and no sharp angles, so that its parts cannot rust together and make the rim difficult to manipulate. This is the same equipment as was used in connec-This is the tion with Firestone tires by the Locomobile in winning the Fairmount Park race at Philadelphia, Oct. 10. Also the Firestone non-skid, an all-rubber non-kid and the rest of the state of th skid tread, formed by the raised oblique lettering "Firestone Non-Skid," ar-ranged in rows across the tread surface of the tire. It is claimed to outclass any other non-skid in the number and variety of angles, edges and points of road contact, thus securing better antiskid properties and long-lived effectiveness. At the Firestone booth is a waxed plank on which this tire has been run, showing in a unique fashion the multiplicity of road contact points. This exhibit includes the complete Firestone line of automobile and motor truck tires.

Cement Freight Rates .- The Pennsylvania Railway is preparing to make a heavy cut in its rates on cement from Northampton and Lehigh counties to Philadelphia, Pa. The present rate on cement from the Pennsylvania fields to Jersey City via the Jersey Central, and other roads, is 80 cents a ton, while to Philadelphia it is \$1.35 a ton. The railroad is now considering the establishment of an 80-cent rate to Philadelphia, placing it on a par with Jersey City.

Edison Poured Concrete House.-The Edison Portland Cement Co., St. James Bldg., New York, N. Y., expects to have a very attractive exhibit at the Cleveland Cement Show, Cleveland, January 11-16, 1909. Among other interest-ing things in connection with the manu-facture of Edison Portland Cement, the company expects to have on exhibition a number of sample castings of the Edison poured concrete house. The economic value of concrete flowing to place of gravity will be evident to constructors and laymen.

Refuse Destructors.—The Power Specialty Company, 111 Broadway, New York City, states that a contract for a Heenan refuse destructor of sixty tons' Heenan refuse destructor of sixty tons' daily capacity, complete with water tube boilers, superheaters, clinker crushing machinery and buildings, has been signed with the city of Adelaide, N. S. W.; also a contract for a fifty-ton plant for Penang, Straits Settlements.

Garbage Cans and Incinerators.—E.

Barrington of Kansas City Mo. is

Barrington, of Kansas City, Mo., is looking over Oklahoma City with a view to erecting a plant for incinerating garbage and also for manufacturing garbage cans. He has a proposition in view to make to the City Council.

PATENT CLAIMS

907,343. Equalizing Device for Pumps, Turbines and the Like. Arno Griessmann and Otto Gottschling, Berlin, Germany. Serial No. 363,492.

Means for preventing end thrust of shafts of centrifugal pumps, turbines and ven-

Means for preventing end thrust of shafts of centrifugal pumps, turbines and ventilators comprising a piston secured upon the shaft, a cylinder having its walls forming inner and outer pressure chambers, in one of which the piston is located, a vertical throttle passage having one end connected to one of the chambers and a horizontal passage converting its other order.

in one of which the piston is located, a vertical throttle passage having one end connected to one of the chambers and a horizontal passage connecting its other end to the other chamber.

907,356. Subaqueous Tunnel. Olaf Hoff, New York, N. Y. Serial No. 428,013. In a subaqueous tunnel, a preconstructed tunnel tube section composed of one or more tubes exteriorily provided at intervals with transverse diaphragms of substantially rectangular shape, the lower edges of the diaphragms forming a level base adapted to support the tube at intervals upon the water bed.

907,357. Method of Sinking Subaqueous Tunnels. Olaf Hoff, Tarrytown, N. Y. Serial No. 435,904.

In subaqueous tunnel construction the herein described method of laying a tunnel tube or a section thereof which consists in constructing the same on land with an outer supporting frame adapted to form the sides, ends and division walls of a form for embedding it in concrete, the division walls dividing the form transversely into compartments, excavating upon the water bed a trench, the bottom of which is below the level required for supporting the tube, constructing upon said bottom a foundation and then embedding it in concrete by introducing the material into the compartments formed by the outer frame 907,407. Subaqueous Rock-Breaker. Charles L. Rowland, New York, N. Y. Serial No. 171,791.

In a subaqueous rock-breaker, the combination of a vertical tube, a chisel movable through the bottom thereof, a hammer separate from the chisel and adapted to reciprocate therein and strike the chisel, means for keeping the tube substantially free from water.

907,438. Form for Concrete Construction. William L. Axium, Downers Grove, Ill.

for reciprocating the hammer, and means for keeping the tube substantially free from water.

907,438. Form for Concrete Construction. William L. Axium, Downers Grove, Ill. Serial No. 408,573.

A form for concrete beams and columns comprising a skeleton frame formed of a plurality of longitudinal members rigidly connected by a plurality of angularly disposed transverse members and a suitable lining for said frame, said form being adjustable by changing the angular positions of said transverse members.

907,441. Bulkhead and Like Retaining-Wall. Wilhelm Baur, New York, N. Y. Serial No. 365,006.

An apparatus for constructing a watertight bulkhead and like structure, said apparatus comprising a series of individual freezing elements to be placed in the water and to substantially inclose the area to be excavated, said elements having enlarged points by which they may be anchored in the soil underlying the water, and means for circulating a refrigerant through said elements for the purpose of freezing the water in situ and to form a retaining wall of solid ice exterior to each of said elements.

907,446. Acetylene-Gas Generator. Charles

water in situ and io form a retaining wall of solid ice exterior to each of said elements.

907,446. Acetylene-Gas Generator. Charles L. Betts, New York, N. Y., assignor to R. E. Dietz Company, New York, N. Y. Serial No. 236,817.

The combination of an outer water supply vessel, a generating vessel arranged therein, a carbid receptacle arranged in the upper portion of the generating vessel and having an open bottom for supporting the carbid and allowing the escape of the residue, an ascending water supply pipe extending from the bottom of the generating vessel upwardly through the open bottom of the carbid receptacle, a distributing head arranged on said pipe above said open bottom and adjacent thereto, a regulating valve arranged in said distributing head, and a stem extending from said valve upwardly through the cover of said generating vessel, substantially as set forth.

907,452. Pump-Operating Mechanism. Francisco G. Bascolo, Buenos Ayres, Argentina. Serial No. 417,213.

Pump operating mechanism comprising in combination a well pipe provided with a packing box, a pump rod disposed in said pipe and passing through sand packing box, a branch for said pipe leading to a supply tank, a supporting base secured to said pipe, a driven shaft mounted on said base and provided with a crank disk, a crank rod secured to said disk at one end, a crank rod cross head secured to opposite end of said crank rod, a guiding rod on which said cross head is slidably mounted, brack-

ets secured to said pipe and supporting said guiding rod, a driving rod secured to said crank cross head and guided by one of said brackets, a driving rod cross head secured to the upper end of said driving rod, means for removably securing said driving rod cross head to said pump rod, and a mill rod adapted for connection with said pump rod.

rod adapted for connection with said pump rod.

907,474. Compressed-Air Engine for Conduit Wire-Drawing. Harry C. Dickinson, Mobile, Ala. Serial No. 367,094.

The combination with an engine for underground conduits, of means for guiding and centralizing the engine in the conduits comprising a truck composed of side and cross beams on which the engine is mounted, guide rollers journaled under each corner of the truck, spring arms adjustable longitudinally on said side beams, and centralizing rollers journaled in the free end of said arms, substantially as set forth.

and centralizing rollers journaled in the free end of said arms, substantially as set forth.

907,580. Combined Garbage-Burner and Water-Heater. John J. Duve, Chicago, Ill. Serlal No. 431,399.

A combined water heater and garbage burner provided with a fire box, a garbage chamber and a smoke outlet from the garbage chamber, and comprising a plurality of selections each of such sections provided with an inner and an outer wall arranged to obtain a water receptacle therein, and such sections attached together so that the water receptacle in one section is in communication with the water receptacle of the adjacent section and hollow bars integral with the corresponding sections and respectively communicating with the water receptacles therein, such bars arranged to form a grate separating the fire box and the garbage chamber and to obtain a by pass arranged to discharge into the garbage chamber above the grate, and additional hollow bars arranged to prevent the by pass from becoming choked up, through which grate and by pass respectively, the products of combustion in the fire box may pass into the garbage chamber and to the smoke outlet.

907,769. Smoke-Filter. Edwin P. Fuller, Detroit, Mich. Serial No. 447,159.

A smoke filter comprising a chamber having a tangential inlet at its lower portion, and an outlet at the top, and a series of partitions across the chamber, the lower partition comprising a plate having a central opening and a mattress of fibrous matter above the plate the next partition like the lower, and so on alternating plates and mattresses to the top of the filter, and a spray pipe between the partitions, as specified.

PROPOSALS

REFUSE DISPOSAL City of Boston-Street Department.

Bids will be received at the office of the Superintendent of Streets of the City of Boston, 47 City Hall, on Tuesday, January 20, 1909, for the erection and operation on the property of the City of Boston at Fort

Hill Wharf, of a plant for the disposal by incineration of portions of the combustible waste, to be separated from city refuse, delivered at the plant. The approximate amounts of refuse to be treated, based on the collections for the present year, are as

Portions of the above having a commercial value to become the property of the contractor, so long as disposed of in a sanitary manner, the clinker resulting from incineration and clean ashes screened from mixed refuse to be delivered on board city scows.

Alternate proposals will be received on the basis of disposal of refuse as above indicated, the contractor to erect a dumping station at Fort Hill Wharf and incinerating plant in vacant building near the Pumping Station at the Cow Pasture, so called in Dorchester, the screened ashes and clinker to be disposed of by the contractor.

Bidders are expected personally to examine the locations and materials and submit their own plans and detailed specifications. Plans of the locations and general specifications will be furnished on applicaspecifications will be furnished on application at the office of the Superintendent of Streets. The contract will be for a term of there (3) years with a right to extend for a further term of five years on the part of the City of Boston.

GUY C. EMERSON,

Superintendent of Streets.

STREET PAVING AND SEWER PIPE

Naperville, Ill.

Sealed proposals will be received by the Board of Local Improvements of the City of Naperville until 3 o'clock P. M., on Monday, the 18th day of January, 1909, for the construction of a Local Improvement, consisting of draining, grading, curbing and paving with macadam the roadbeds of a system of streets in the City of Naperville, requiring approximately the following items: 1,700 feet of 18-inch tile sewer pipe; 590 feet of 15-inch tile sewer pipe; 2,630 feet of 12-inch tile sewer pipe; 3,320 feet of 10-inch tile sewer pipe; 3,400 feet of 8-inch tile sewer pipe; 2,000 feet of 6-inch tile sewer pipe; 160 storm water inlets furnished and set; 36 manholes built; 74 old manholes adjusted; 56,000 linear feet of concrete curb 5x20 inches: 87,600 square yards of macadam pavement. Plans, specifications and ordinance can be examined and blank forms of proposals may be obtained at the office of E. M. Schwartz, Attorney Board of Local Improvements, Naperville, Ill., or at the office of the Engineer, W. S. Shields, 1201-3 Hartford Bldg., Chicago,

The cost of the improvement will be paid for in Special Assessment bonds, issued in accordance with the laws of the State, and bearing interest at the rate of 5 per cent. per annum. The Board reserves the right to reject any or all bids.

P. E. KROEHLER, Pres., VALENTINE KELLER, A. H. BEIDELMAN, Board of Local Improvements.

GAS AND ELECTRIC LIGHT PLANT

Chillicothe, Mo.

Chillicothe, Mo.
Proposals wanted for the construction of a gas and electric light plant for street and private lighting, with day current, in Chillicothe, Missourl, a city of eight thousand, fifteen-year franchise.

All communications should be addressed to City Clerk.

H. I. SPENCE, City Clerk, Chillicothe, Mo.

Proposal Advertising

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